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Sir William Osler and Dr. Llewelys F. Barker examining Sir William Stirling-Maxwell's copy of the *Tabulae Anatomicae* of Vesalius at the Bodleian Library, September, 1909.

BULLETIN OF THE MEDICAL LIBRARY ASSOCIATION

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Editorials

OSLER AND THE SIX ANATOMICAL TABLES

THE QUATERCENTENARY of Vesalius's birth was to have been celebrated in Brussels in December, 1914. But as World War II has put an end to any real opportunity for the celebration of the publication of the *Fabrica* in 1943, so in 1914, World War I prevented the celebration of the quatercentenary of the year of birth of Vesalius. Sir William Osler, according to Cushing,[1] had intended that the Oxford University Press should reprint the *Tabulae Anatomicae* as a contribution to the proposed 1914 celebration. It was impossible to carry out these original plans. After the war, however, Holl and Sudhoff[2] reproduced a three-quarter size edition of this important work from the St. Mark's copy.

Besides the copy in the St. Mark's Library in Venice the only known set of the original tables is the one now in the University of Glasgow Library. This set was formerly owned by Sir William Stirling-Maxwell. In 1874 he published a facsimile edition of thirty copies in full size.[3] At his death the original set and a few remaining facsimiles passed to his son, Sir John Stirling-Maxwell.

On August 11, 1909, Dr. Osler wrote the following note to Dr. Fletcher of the Surgeon General's Library:

13, Norham Gardens,
Oxford.

Dear Fletcher:

I have asked Sir John Stirling Maxwell to send to the Surgeon-General's Library one of his few remaining copies of his father's reprints of the rare

[1] Cushing, Harvey: The Life of Sir William Osler. Oxford, Clarendon Press, 1925. v. 2, p. 187.

[2] Holl, Moriz and Sudhoff, Karl: Des Andreas Vesalius sechs anatomische Tafeln vom Jahre 1538 in Lichtdruck neu herausgegeben. Folio, 12 p., 6 facsimile pl. Leipzig, Barth, 1920.

[3] Tabulae anatomicae sex. The Six anatomical tables of Andrew Vesalius. Venetiis, Imprimebat B. Vitalis, Venetus, sumptibus Joannis Stephani Calcarensis, 1538. Atlas fol. 6 l., 6 pl. and t.p. London, Privately printed for Sir W. Stirling-Maxwell, 1874.

Tabulae Anatomicae of Vesalius at the Bodleian Library, September, 1909.

Tabulae Sex of Vesalius. Of the original only two copies are known, of the reprints 28 copies. If, as is hardly possible, the library may have secured one of the reprints, please hand over this duplicate to the Library of the Johns Hopkins University. Sir John Stirling Maxwell had only six copies left, one of which I told him that the Washington Library certainly should have.

I hope you are better.

Sincerely yours,

Wm. Osler.

This copy was duly received in September. In the same month Osler and his good friend Dr. Llewelys F. Barker[4] visited the Bodleian Library to admire the set of the original *Tabulae Anatomicae* which Sir John had placed there temporarily.

A snapshot was taken on this occasion, and an enlarged print of it was sent by Dr. Harvey Cushing to Dr. Edward Fitch Cushing at Christmas, 1910. When the latter died in the following year, it was presented by Dr. Harvey Cushing to Dr. John Phillips. After the death of Dr. Phillips in 1929, the John Phillips Room was set aside in the Allen Memorial Medical Library Building, and this print was given a place on its walls. It has been reproduced as our frontispiece by courtesy of the Cleveland Medical Library Association.

CHANGE OF EDITORSHIP

With this issue the editorship of the Bulletin has changed hands. Colonel Jones due to the extra burden of work placed upon his shoulders in his official capacity as Librarian of the Army Medical Library will not be able to devote as much time as formerly to our Journal. However, we are extremely pleased that he has consented to stay on the Publication Committee as Chairman. Under his able direction the Bulletin has had a distinctive quality which we hope it may not altogether lose.

[4] Osler presented Dr. Barker with a copy of the first edition of the *Fabrica* as a wedding present.

Three Pathfinders of Science in the Renaissance

By Arturo Castiglioni, M.D.

In the years 1543 and 1546, there appeared three revolutionary books which had a decisive influence on the development of scientific thought. These were the *Fabrica* of Andreas Vesalius, the *De revolutionibus orbium coelestium* of Nicolaus Copernicus, and the *De contagione et contagiosis morbis* of Hieronymus Fracastorius. All three scientists had studied medicine at the University of Padua.

Vesalius, Copernicus, and Fracastorius are among the great leaders in the fight against the Galenic and Ptolemaic doctrines, which had come to be accepted not merely as scientific dogmas but as articles of faith. Until their time, the canonic medical texts were expounded in the universities with the same attitude of mind, and with the same subtlety in the interpretation of difficult passages, that was applied to philosophical texts. The method of teaching was exclusively dialectical. The teacher might, indeed, linger for months over a passage of Hippocrates or Avicenna, of Aristotle or Galen. Above all, the physician had to be a philosopher, that is, he had to be able to discuss all questions concerning health and disease in syllogistic form and with the help of classic quotations.

After long preparation, the characteristic attitudes of modern science began to emerge. In the course of more intensive study of the ancient texts, fresh observations were made to determine the meaning of particular passages; and the need was felt at first for occasional correction and then for radical revision. A step in this direction was made toward the end of the fifteenth century with anatomical study of corpses and a return to direct observation of nature. At about the same time, the spread of printing resulted in the rapid diffusion of many scientific works which had formerly been incorrectly transcribed by ignorant copyists and which had, for the most part, been beyond the reach of students. Now classical texts were rendered familiar to all scholars. Moreover, books illustrated by drawings from nature began to displace the conventional pictures, more symbolic than representative, which had become universally accepted.

At this time, the international function of the universities was manifestly introducing a characteristic note into the history of science. The renaissance of architecture, of the plastic arts, and of painting had an essentially national character. The scientific renaissance, however, assumed an international character at once, since it marked the beginning of a universal scientific movement.

Finally, an exceptionally important event determined the position of the Italian universities in the development of scientific thought in the sixteenth century. Throughout Europe, but chiefly in Germany, there were religious wars, and university teaching was jealously supervised by the ecclesiastical authorities. Italy, however, retained a certain freedom of thought, and Padua, governed with great wisdom by the Venetian Republic, protected all students regardless of nationality or creed. Well aware that its economic power rested on free trade, Venice had also achieved intellectual leadership by opening its doors to foreigners and fostering freedom of thought and expression.

At a time in which a great passion for studies, a great love of beauty, and an inexhaustible desire for glory vivified all the works of the Italian artists and scholars, students and teachers from all parts of Europe came to Padua, which had become the center of scientific research. Here astronomers sought the secret of the stars, physicians the mystery of life, mathematicians the answers to the most difficult problems of geometry and of algebra. Copernicus, the Pole, prepared the way for Galileo; Vesalius, the Fleming, was the forerunner of Harvey and Malpighi; Fracastorius, the Italian, marked the road to modern pathology. Contemporaneously physicists, naturalists and physiologists introduced the renaissance of science.

In this rebirth of human thought, art played a very important rôle. The human figures, which up to this time were all alike in the hieratic rigidity of their poses, became animated and detached themselves from the background on the canvases of the individualistic renaissance artists. The drawings of anatomic texts showed, for the first time, the organs, the muscles and the bones in their true shape. The individualism of the renaissance inspired art as well as medicine. On the one hand, the great artist, e.g., Leonardo or Michelangelo, is now an anatomist and a physician in the study of the physical functions of the body and in the expression of the features; and on the other hand, in the individual expression of his critical mind, the physician of the renaissance is also an artist.

In the early sixteenth century, fugitive sheets of anatomy were published in Bologna, Paris, Nuremberg, Venice, and elsewhere. These were undoubtedly drawn and printed especially for students. Among them were the anatomical figures printed in six tables in Venice by

Bernardino Vitali and bearing the name of Andreas Vesalius. These realistic charts not only provided a guide to dissection, and a means of checking its results by the work of a master; but they were so much more accurate and adequate than the older conventional pictures that they also made it possible for those who could not make or witness dissections to acquire a fair knowledge of anatomy. Anatomy in Italy in the period of its splendor, therefore, evolves with drawing, for drawing and through drawing. The need of texts was no longer felt so much as the need of pictures. Thus the six tables which Vesalius published before writing his *Fabrica* found an immediate success.

Vesalius was encouraged by the success of these tables, to undertake his great work, the *Fabrica.* Here are collected the experiences of a teacher who understood the necessity of performing dissections accurately and of teaching not according to classical books, but according to critical observation and individual findings. Since the illustrations were to be an essential and integral part of the book, it is no wonder that Vesalius wanted them executed by a master artist. Fortunately, he was able to secure as his collaborator, the able Stephan van Calcar who shares in the honor conferred upon the *Fabrica.*

The well known frontispiece of this book is programmatic, and the splendid picture of the dissecting anatomist surrounded by students and physicians conveys to all the necessity of attending personally to dissection and teaching. Vesalius was at the same time artist, physician and teacher. He really conceived of the human body as a fabric, as a wonderful building in which each part, however small, has its determined function and, consequently, must be carefully studied.

The importance of Andreas Vesalius's anatomical discoveries and his original observations in physiology and pathology has been sufficiently appreciated by his biographers and by many historians. Most significant, however, is the fact that he courageously attacked the scholastic doctrines of Galen and his followers down to Sylvius. The latter had been Vesalius's teacher in Paris and later became his fiercest enemy. The *Fabrica* is one of the great historical documents of the renaissance, and Vesalius appears to us as the gallant fighter who, in the whole of his adventurous life from Flanders to Paris, from Padua to Brussels, from the schools of medicine to the Court of Charles V and Philip II, never failed to defend his doctrines and who, to the last day of his life, longed to return to his anatomical studies and to his school.

It was customary at that time for those who desired a higher education to go to the Italian schools, and especially to Padua, the degrees of which were highly esteemed. Following this tradition, Nicolaus Copernicus, who was born in Thorn, Poland, in 1473, repaired to Bologna at the age of twenty-three. Later he went to Rome where he studied canon

law and lectured at the University. In 1501, he entered the medical school of Padua. After completing his studies, Copernicus returned to Poland. His uncle, the Bishop of Ermland, appointed Copernicus a canon of the Cathedral of Frauenburg in 1503. He also practiced medicine, giving his services freely to the poor.

While in Italy, he had devoted himself to the study of astronomy and laid the groundwork for his heliocentric theory. His new system of astronomy was his main interest throughout his life, and he always found time for it amidst his many occupations in administrative and political fields. Copernicus had observed that the epicycles and the eccentrics were not enough to explain celestial movements. In the period of the return to the classics, he guided astronomy back along the lines already pointed out by the Greeks. It was he who revived the heliocentric conception of the cosmos owed to Aristarchos of Samos. In his system, he had the courage to deprive the earth of its office as center of the universe. In 1543, shortly before his death, his famous work, *De revolutionibus orbium coelestium,* appeared. This work marked a new era in the astronomical conception of the universe and was one of the turning points in the scientific renaissance.

A schoolmate of Copernicus at the Paduan School of Medicine was a young Veronese, Hieronymus Fracastorius. Astronomical problems interested him a great deal and he soon doubted the truth of the Ptolemaic system. Many of his works were dedicated to astronomical problems, and some scholars now believe his thought tended in the same direction as that of Copernicus. But it was a medical problem of extreme importance—the problem of the pathology of contagious diseases—which, above all, attracted the attention of the young physician.

Fracastorius was a man of the renaissance in the fullest sense of the term, for he was not only devoted to astronomical and mathematical studies, but was also an expert in classical literature, a charming poet, a philosopher, a geographer and an exquisite musician. He studied the French disease with great care, traced its history and described its course in a Latin poem, *Syphilis sive morbus gallicus* (1530), which the most important scholars of the period considered comparable to those of the Latin poets of the Golden Age.

Although this poem by Fracastorius already revealed his ideas on the origins of contagion and showed his efforts to solve this difficult problem, it is rather his book, *De contagione et contagiosis morbis* (1546), that deserves consideration as the first classical text of epidemiology. Typhus, which up to this time had been confused with plague or typhoid fever, was exactly described.

In this book is found the conception of three fundamental types of

infection: the first of which comprises the infections spreading only through contact; the second those spreading through contact or special agents (*fomites*), such as clothes, furniture, linen, and those things which, without being altered themselves by contagious germs, can, however, contain and transmit them; and the third group those diseases in which infection takes place not only through contact or through an agent, but also through transmission from a distance through the air. He explained this movement of the germs by saying that the cause which gave movement to the corpuscles of contagion resided partly within themselves and partly in external forces. Germs, furthermore, passed through the pores; and a penetration through propagation occurred because the first germs, in their chosen place, produced other germs like themselves and so on until all the humours of the body were infected. Fracastorius also stated that a penetration through inspiration brought the germs from the air inside the body. These germs introduced with air during inspiration were not expelled during expiration because they agglutinated with the humours and with the organs. Some were carried as far as the heart.

Finally, there is in Fracastorius's conception the germ of the idea of immunity, for in speaking of the contagion attacking living bodies he writes: "Among living bodies some undergo contagion very easily, others with more difficulty, but some never. So much so that the question arises whether it is possible through habit to become immune to contagious diseases in the same way as we can get invulnerable to poison—*utrum pestilentiis assuescere possimus sicuti venenis.*"

In these three great revolutionary books, we have three courageous and successful attempts to attack the fortress of scholasticism which seemed to be impregnable and which was defended with the utmost strength. The scholar who wants to be acquainted with the history of the evolution of human thought at a time which marked the beginning of modern science must appreciate the part which these three books have played. These three physicians who put in their works the results of their studies and their experiences and who defended the independence and the originality of their beliefs, are among the most representative characters of this historic period. Andreas Vesalius, Nicolaus Copernicus, and Hieronymus Fracastorius all began with a diligent and conscientious study of the classic works of the ancients. They all felt the necessity for free criticism and were guided by the same belief that universal laws rule the cosmos. Vesalius considered the human body a perfect fabric conceived by the Creator and achieved by the supreme artist, Nature; Copernicus, a lawyer, a philosopher and a physician, had the conception of the universal law of the world; Fracastorius, reviving the principle of the atomistic doctrine of Epicurus and Lucretius, conceived the biological laws of contagion, infection and immunity.

Vesalius and His Book

By Max H. Fisch

NDREAS VESALIUS has long been recognized by historians of medicine as the founder of modern anatomy; and his *Fabrica,* whether in the first or in the second edition, is the chief treasure of any medical library that owns it. But in the larger history of science and of culture Vesalius has not yet been given his place as the embodiment of the renaissance spirit in the field of medicine; and though the artistic merits of the *Fabrica* have been sufficiently admired, its unique position in the development of the printed book as a medium for the communication of descriptive science has not yet been generally appreciated.

Among the familiar notes of the renaissance are two in unstable equilibrium and frequent conflict: the passion for exploration, discovery, manifold experience; and the cult of antiquity. Both were strongly developed in Vesalius from childhood, assuming the special forms of a passion for dissection of animals on the one hand, and a reverence for the Greek medical tradition on the other. The conflict between the two did not emerge until he reached maturity, for he had the renaissance knack of persuading himself that each was a corollary of the other.

Vesalius was the fifth of a line in which the medical profession had passed from father to son. The first had written a commentary on a part of Avicenna's Canon of Medicine, and had had copies made for himself of all the medical texts then in use, which were handed down in the family. The second had been professor of medicine, astronomy and mathematics in the University of Louvain, and later city physician of Brussels; and had established the family fortune. The third had been physician to the Emperor Maximilian, and had written commentaries on the work of the Arab physician Rhasis, and on the Aphorisms of Hippocrates. The fourth, Vesalius's father, was apothecary to Margaret of Austria and later to the Emperor Charles V. Vesalius himself in turn

became physician to Charles V, and later to his son Philip II of Spain, the two dominant figures in sixteenth century European politics.[6,7]

Vesalius's mother was Elizabeth Crabbe, and the family home in Brussels was on land that had belonged to her father, Jacob Crabbe, who was probably of English origin. Behind the house there stretched a vacant and partly wooded area, called Gallows Hill, at the farther end of which condemned criminals were executed and their bodies left exposed.[7] There the boy Vesalius could observe from day to day the crude dissection performed on these bodies by time, the elements, and birds of prey; and could gather the bones he was later to describe so carefully in the *Fabrica.* Quite early he began himself to dissect rats, moles and dormice, with now and then a cat or a dog.

His father was away from home most of the time, accompanying the Emperor on his journeys and campaigns; but his mother seems equally to have cherished the medical tradition and vocation of the family into which she had married. It was she who preserved the books that had come down from Vesalius's forebears, and especially those which they had written themselves. She must often have turned their pages with the son who was to follow in their footsteps. She lived to add his book to the others; indeed it was she who procured the imperial *privilegium* for the *Fabrica* and sent it from Brussels to Oporinus at Basel.

Certainly in Vesalius's youth there was no conflict between tradition and experiment in his own mind. Was not his a family after the pattern of the ancient family of the Asclepiads, in which, as Galen put it, the boys learned dissection at home along with reading and writing? And was it not from just such families that a rebirth of medicine must come?

After the usual schooling in Latin, Greek and the liberal arts at Brussels and Louvain, Vesalius went to Paris in 1533 to study medicine. His chief teachers were the anatomists Jacques Dubois and Guinterius of Andernach. Fernel, a deeper man than either of these, and a deeper man than Vesalius became, seems not to have touched him; perhaps because he did not teach anatomy. But what Dubois and Guinter really taught him was not anatomy but Galen. The occasional dissections by a barber-surgeon in their courses were aimed at the elucidation of Galen, and were largely confined to the viscera. "Except for eight muscles of the abdomen, disgracefully mangled and in the wrong order, no one . . . ever demonstrated to me any single muscle, or any single bone, much less the network of nerves, veins and arteries." The *fabric* of the human body was a continent reserved for his own exploration. When his fellow-students, and through them his teachers, learned that he had practised dissection from boyhood, they encouraged him, at the third dissection he attended, to take the knife himself; and he readily performed a more thorough and skilful dissection than the barber-surgeons could provide. This was followed by others quite beyond their range. As at Brussels, but now with a

band of fellow-students to help him, he also collected bones at the cemetery of the Innocents; and at Montfaucon, where the bodies of the hanged were exposed and their bones lay in heaps, they fought off the dogs to secure the specimens they wanted.

While Vesalius was at Paris, Guinter compiled from Galen a small textbook of anatomy, without illustrations. In the first edition (1536) he spoke of Vesalius as "a youth of great promise, with a remarkable knowledge of medicine and of Greek and Latin, and great dexterity in dissection." It was by the help of Vesalius, he said, that he had finally traced the spermatic arteries to their origin. In a later edition (1539) he acknowledged that he had been assisted throughout by two able dissectors, Vesalius and Michael Servetus. "With the aid of these two, who attended my lectures on Galen, I have examined in the bodies themselves all the muscles, veins, arteries and nerves of the limbs and of the other external parts." But even this was an understatement, if we may judge by Vesalius's later *apologia pro vita sua* in his China Root Epistle of 1546:

> I reverence him on many counts, and in my published writings I have honored him as my teacher; but I wish there may be inflicted on my body, one for one, as many strokes as I have ever seen him attempt to make incisions in the bodies of men or beasts, except at the dinner table. Nor do I think he will take offense if I say of him, as of not a few others, that he is largely indebted to me for whatever he knows of anatomy apart from what is in the books of Galen, which are common property.

On the outbreak of the third Franco-German war in 1536, Vesalius returned to the University of Louvain. With the help of his friend Gemma Frisius (the teacher of Mercator), he smuggled in from the gallows outside the city walls a skeleton which they had found still held together by the ligaments and still possessing the origins and insertions of the muscles. Under the sponsorship of Jean of Armentières, professor of medicine, he set up this sketeton beside the dissection table, and "somewhat more accurately than at Paris expounded the whole fabric of the human body in the course of dissecting."

In February, 1537, as if to balance this innovation by a token of respect for tradition, Vesalius published a paraphrase of the ninth book of the *Almansor* of Rhasis, "On the cure of diseases from head to feet," a favorite compendium of general therapeutics, largely Hippocratic and Galenic. He had been encouraged to undertake this paraphrase by his teachers at Paris, and probably thought of it as a companion text to Guinter's Galenic *Institutiones Anatomicae,* to which, as we have seen, he had also lent his hand. His paraphrase was not based on the Arabic original, but on previous translations. He had by him also his grandfather's commentary on Rhasis, and doubtless intended his first publication as a tribute of filial piety to his medical forebears, and a mark of his

coming-of-age in the family succession. Indeed he projected a paraphrase of the entire ten books of the *Almansor,* which he later completed but destroyed when he gave up teaching and entered the emperor's service.

The prefatory epistle to Nicolaus Florenas, physician to Charles V, was dated at Brussels, February 1, 1537, a month after Vesalius's twenty-second birthday; and the book was published at Louvain before the end of February. The next fixed date in his life is December 5 of the same year, when he received the degree of doctor of medicine at Padua, after some months of clinical study at Venice. We do not know when or by what route he went from Brussels to Venice; but from the fact that a second edition of his Paraphrase of Rhasis was published by Ruprecht Winter at Basel in March, 1537, I infer that he went by way of Basel; and from the far superior accuracy of the Basel edition I infer that he did not see the proofs of the Louvain edition, but went directly from Brussels to Basel and was there for a month or more seeing the second edition through the press.

Winter had three partners: Platter and Lasius, who had published Guinter's *Institutiones Anatomicae;* and Oporinus, who was later to publish Vesalius's *Fabrica, Epitome,* and China Root Epistle. Vesalius formed intimate friendships with these and other Basel printers.[6] In 1539 he had his Epistle on Bloodletting published by Winter, and in 1543 he stood godfather for Winter's son Hans. The earliest recollection of Platter's son Felix, himself an eminent physician, was seeing Vesalius in his father's home. In 1555 Johann Herwagen the elder sought his aid in securing the imperial *privilegium* for a book he wished to print, and an appointment as imperial notary for a nephew he wished to advance. When Henricpetri printed an edition of Rhasis in 1544, he included Vesalius's Paraphrase; and it was largely through Vesalius's personal application to the emperor that Henricpetri was knighted in 1556. But above all it was Oporinus who attracted Vesalius by his classical scholarship, by the mastery of medical terminology he had acquired under Paracelsus, by his meticulous proofreading, and by his *Gemütlichkeit.*

These friendships with Basel printers were Vesalius's tribute of gratitude, I think, for their having opened up to him the possibilities of the printed book with illustrations. Basel was now the chief publishing center of Europe; and it was especially pre-eminent in woodcut ornamentation and illustration, largely as a result of Holbein's collaboration with Froben and other printers there. It is no accident that the finest illustrated medical books of the century—Fuchs's *De Historia Stirpium* (1542), the most beautiful of all herbals, and Vesalius's *Fabrica* (1543), the most beautiful of all anatomy books—were printed at Basel.

It is not improbable that the dream of the *Fabrica* began to take shape at Basel in March, 1537. Certainly one of the first things Vesalius did after reaching Venice was to seek out an artist to help him prepare

anatomical drawings for woodcut reproduction. Perhaps it was by applying to Titian that he was put in touch with Titian's pupil and his own fellow-countryman, Jan Stephan van Calcar.

Their collaboration began not later than December 6, 1537, when Vesalius assumed the chair of anatomy at Padua. Elaborate preparations had been made. A skeleton had been articulated and was set up beside the dissection table, as at Louvain, so that his audience might have

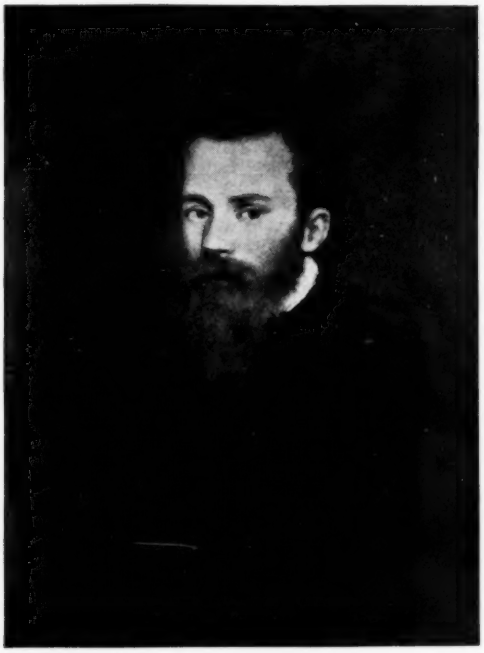

FIG. 1. Portrait of Vesalius by Calcar[2]

constantly before them the basic framework of the body. Three cadavers were provided, and the alternate dissection of them continued for three weeks. The first fruits of the collaboration of Calcar were the six Anatomical Tables which Vesalius dedicated to Narcissus Vertunus, chief physician to Charles V, under date of April 1, 1538, from Padua. The drawings for the three skeletal tables were made from Vesalius's skeleton by Calcar, and the wood engravings for all six tables were probably made at Venice under Calcar's direction. The sixth bears the colophon: "Printed at Venice by B. Vitale at the expense of Jan Stephan van Calcar. For sale at the shop of D. Bernardo. 1538."

Vesalius used as his anatomy textbook Guinter's Galenic *Institutiones Anatomicae,* but found in the course of his dissections that it needed extensive revision. He incorporated his revisions in a new edition which he published shortly after the Tables, with a dedicatory epistle to Jean

of Armentières, professor of medicine at Louvain, under date of May 5, 1538. Thus within the first five months of his professorship he had published a textbook incorporating the results of his first-hand observations, and a set of tables in partial illustration of the textbook. But the text and illustrations were still essentially Galenic, and his revisions were conceived as corrections not of Galen but of Guinter. He preserved his renaissance bivalence by using his own observations, and even the Tables, to restore the original sense of Galen.

Nearly two years later, on January 1, 1539, in the concluding sentences of his Epistle on Bloodletting, addressed to Nicolaus Florenas, physician to Charles V, he reported his further progress in the work of providing adequate anatomic illustrations. Two new tables of the nerves, later used in the *Fabrica,* were ready; but those for the muscles and for the internal organs were still to be done. He had tried to conduct the dissections of the year in such a way that these could be made, but the throng that attended the course (often as many as five hundred) had made it impossible. He was being urged from all sides, and particularly by Marcantonio Genua, the professor of philosophy, who had become "as it were a second father" to him, to hasten the completion of the great work to which he had set his hand. And "if I have bodies enough to work with, and Jan Stephan, the outstanding painter of our age, continues to play his part, I shall not evade the task."

About this time the Giunta press at Venice projected an edition of Galen in Latin, asked Vesalius to revise the best existing versions of the *De nervorum dissectione,* the *De venarum arteriarumque dissectione,* and the *De anatomicis administrationibus,* and supplied him with a collection of variant readings of the Greek text for the purpose. When the Giunta edition appeared in 1541, the editor said in his preface that after Vesalius had "corrected in many places" the translation by Antonio Fortolo of the first two tracts, it was only with the greatest difficulty that he was persuaded to revise the translation by his former teacher Guinter of Galen's great work on anatomic procedure. In the end, however, he had done this so thoroughly that as now printed it was "almost a new treatise."

In preparing his Paraphrase of Rhasis and in revising Guinter's *Institutiones,* Vesalius had innocently used his own observations to restore the sense of what he took to be corrupted passages. But now, as a result of examining the Greek texts of Galen more carefully, and checking Galen's statements by his own dissections, he was driven to the conclusion that Galen's anatomy was essentially that of the anthropoid apes, conjecturally but often erroneously extended to man. As he later put it in the *Fabrica:*

> It is quite clear to us, from the revival of the art of dissection, from a painstaking perusal of the works of Galen, and from a restoration of them

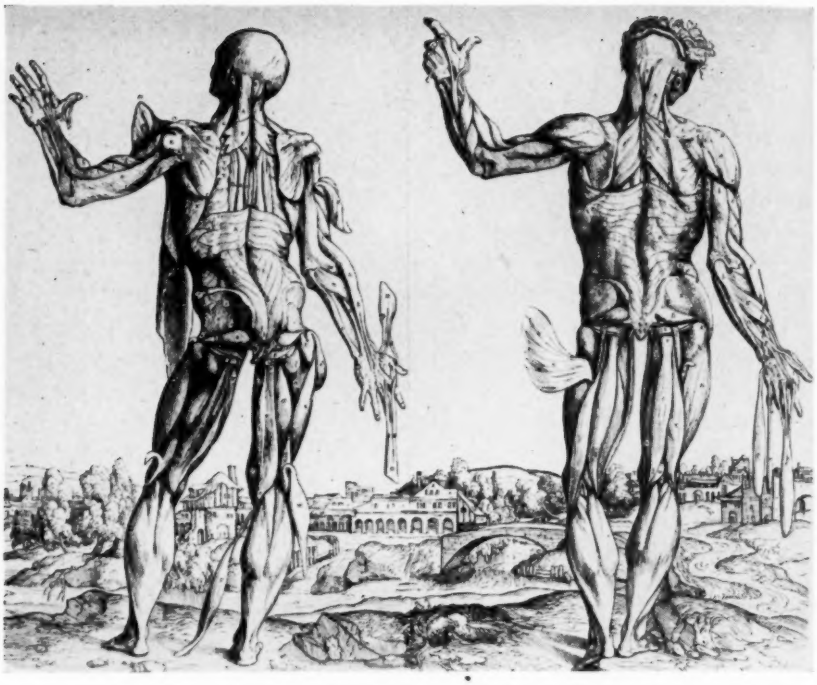

FIGURE 2. Muscle Tables XI and X from the *Fabrica*

in several places, of which we have no reason to be ashamed, that Galen himself never dissected a human body lately dead.

After making this discovery, Vesalius gave up reading his own observations into Galen; and when they were at variance with what he found there, he frankly presented them as corrections of Galen. The results of this change in his method of teaching were reported in the *Fabrica:*

> The medical profession are wont to be upset when *in more than two hundred instances,* in the conduct of the single course of anatomy I now exhibit in the schools, they see that Galen failed to give a true description of the interrelation, use and function of the parts of man. They scowl from time to time, and examine every inch of the dissection in their determination to defend him. Yet they too, drawn by the love of truth, gradually abandon that attitude and, growing less emphatic, begin to put faith in their own not ineffectual sight and powers of reason rather than in the writings of Galen.

So strong, however, was Vesalius's reverence for antiquity that, now that Galen had failed him, he imagined for himself a pre-Galenic anatomy based on dissection of the human body. "Deceived by his monkeys," he says, "Galen often wrongly controverts the ancient doctors who had trained themselves by dissecting human corpses." And much

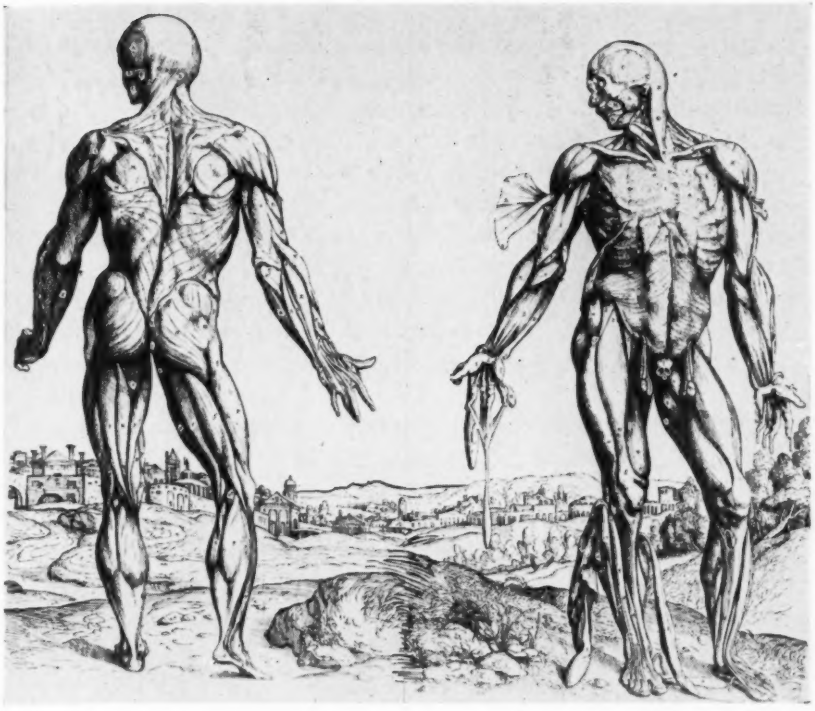

FIG. 3. Muscle Tables IX and IV from the *Fabrica*

as Bacon later lamented the loss of the writings of the pre-Socratic natural philosophers, Vesalius regretted that the pre-Galenic "writings of Eudemus, Herophilus, Marinus, Andreas, Lycus, and other princes of anatomy have not been preserved to us." There was no disrespect for Galen in this, for Galen himself had looked back on a golden age in which anatomy flourished because the Asclepiads learned dissection in boyhood. Thus it was still possible for Vesalius to preserve his reverence for antiquity and to regard his reformation of anatomy as a renaissance.

If Vesalius had had any lingering doubt, it was now, however, obvious that further revisions of Guinter's text, supplemented by further fugitive sheets like his own Anatomical Tables, would not suffice. Since the works of those pre-Galenic anatomists who dissected the human body had not survived, what was needed now was an entirely fresh exposition of "the fabric of the *human* body," based throughout on dissection and first-hand observation, and incorporating in the text itself a complete series of illustrations, carefully drawn from the object itself in the course of dissection.

By 1540, when Vesalius was twenty-five, the plan of the *Fabrica* had been laid out, several of the plates were ready, and Calcar had drawn the

programmatic frontispiece.[1] Dissection-scene engravings were not new in anatomy texts, as appears from those in Mondino's *Anathomia* and in Berengario da Carpi's *Isagogae Breves*. In these, however, the professor reads the lesson out of a book from an elevated desk, while at a table below the barber-surgeon dissects the cadaver and the demonstrator beside him supervises the process and points with a wand to the parts as they are referred to in the text being read. In the frontispiece of the *Fabrica,* Vesalius himself stands at the table and unites into one the three rôles of lecturer, demonstrator and prosector. The barber-surgeons are reduced to keeping his instruments sharp below the table, and a skeleton sits above in the position formerly occupied by the professor. Moreover, Vesalius lectures from the cadaver and skeleton, not from a book.

In its calculated contrast at every point with the traditional dissection scene of the Mondino and Carpi manuals, the *Fabrica* frontispiece is the manifesto of an educational reform. But so much is Vesalius the medical man of the renaissance that he conceives even this reform as a rebirth. Medicine had flourished from Hippocrates to Galen because doctors of every school were masters of all three branches of the art—dietetics, pharmacy, and surgery.

> But after the ruin spread by the Goths, when all the sciences that had previously flourished and been properly practised went to the dogs, the more fashionable doctors . . . began to be ashamed of working with their hands, and delegated to slaves the manual attentions they judged needful for their patients. . . . Methods of cooking, and all the preparation of food for the sick, they left to nurses; compounding of drugs to apothecaries; surgery to barbers. . . .
>
> This deplorable dismemberment of the art of healing introduced into our schools the detestable procedure now in vogue, that one man should carry out the dissection of the human body, and another give the description of the parts. The lecturers are perched up aloft in a pulpit like jackdaws, and arrogantly prate about things they have never tried, but have committed to memory from the books of others, or placed in written form before their eyes. The dissectors are so ignorant of languages that they are unable to explain their dissections to the onlookers, and merely botch what they are supposed to exhibit in accordance with the instructions of the physician, who never applies his hand to the dissection, but contemptuously steers the ship out of the manual, as the saying goes. Thus everything is wrongly taught, days are wasted in absurd questions, and in the confusion less is offered to the onlooker than a butcher in his stall could teach a doctor. . . .

The educational reform proclaimed in the *Fabrica* frontispiece was therefore a means to, and an integral part of, a needed reform of medicine itself. The art of healing had suffered dispersion, and its severed parts had atrophied and decayed. It must be born again, whole and entire. And only a teacher who did his own dissecting could train doctors who would

not abstain from surgery as from the plague, lest they be slandered as barbers by the mandarins of the profession. It need scarcely be added that Vesalius was applying to medicine the renaissance humanist's ideal of totality, and reading it back, in the renaissance fashion, into the rounded Greeks who not only saw but lived life steadily and lived it whole. When the humanist disdained to be but a fragment of a man, could the doctor content himself with being but a fraction of a physician?

The hoped-for reform proved abortive, and the progress of medicine came by increase rather than by decrease of specialization, and by the rise of sciences undreamed of by Vesalius. Though the ideal of totality was not thereby discredited, it was postponed perforce to some heaven of omniscience and omnicompetence. Vesalius's permanent contribution to medicine was the founding of the basic science of human anatomy on the dissection of human bodies. And his permanent contribution to education was not his attempted reform of anatomy teaching, but the perfecting of the printed book as a medium for the spread of scientific knowledge. This was the task that filled the years from 1540 through 1542, and the six months or more that Vesalius spent at Basel seeing the *Fabrica* through the press in 1543. This was the crowning achievement not only of Vesalius, but of Calcar and his associated artists and engravers, and of Oporinus the printer; yet above all of Vesalius, for there was scarcely any detail of preparation or execution which he did not personally plan and supervise. The teaching reform could plausibly be regarded as a return to the Greeks, but the book was a new creation, beyond the dream of any earlier age. Even the Basel printers with whom, as we believe, Vesalius first canvassed its possibilities in the spring of 1537, can scarcely have imagined anything which the fulfilment did not surpass.

The art of writing had from time immemorial made possible the permanent recording of the spoken word, and its indefinite multiplication by copying, so that an unlimited number of people in different times and places could read the same words. But what was physically possible was neither economically nor psychologically possible; for copies made by hand and one at a time were prohibitively expensive, and all texts suffered cumulative corruption by the errors of copyists. The art of printing from type had recently reduced the economic limitation by mass production methods, and nearly eliminated the psychological limitation by enabling the author to insure the accuracy of thousands of identical copies by correcting one proof. The arts of drawing and painting, of wood and stone carving, had from time immemorial made possible the permanent recording of visual impressions; but copies of these recordings made one at a time were even more expensive than copies of the written word; and exact copies of the original were not merely psychologically improbable, but physically impossible. The art of printing from wood

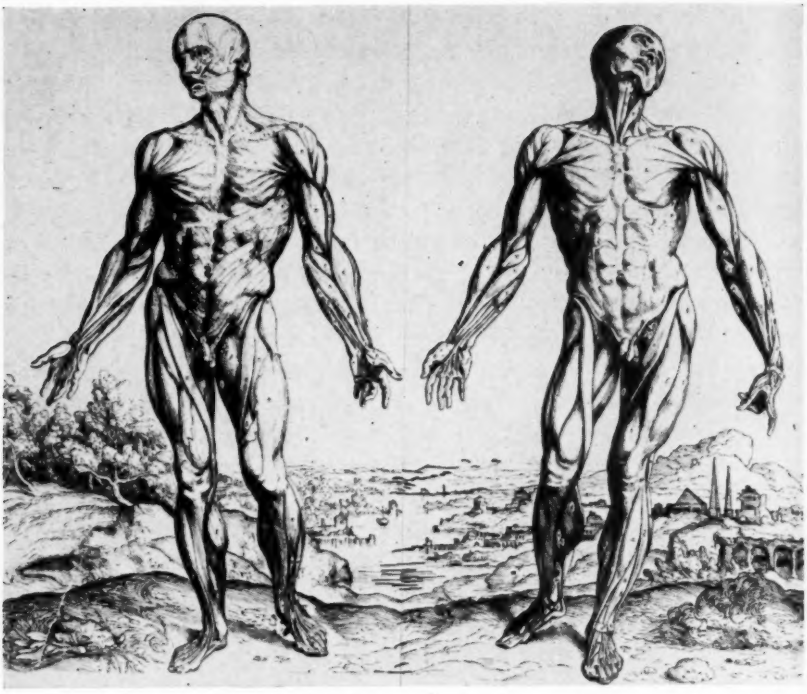

FIG. 4. Muscle Tables III and I from the *Fabrica*

engravings, however, had now virtually eliminated all obstacles except those inherent in the wood itself as a medium for recording the original visual impression.

These arts of printing from type and from wood engravings were closely associated from the beginning, and needed only the rise of a descriptive science like human anatomy to induce their fusion into a single art of communication. The anatomy lecture could be recorded, and the lecturer could control the record more completely than he could control his own tongue. The visual impression of the body under dissection could be recorded and revised under his scrutiny until a proof was run off which satisfied him. The two records could be reconciled with each other and with the physical fact, and woven together into a single record. And by an elaborate system of cross references between printed text and printed picture, an integral effect could be achieved not unlike that of the simultaneous address to the eye and the ear in the dissection-room.

The illustrated book was of course no substitute for attendance on, and practice of, actual dissection. The picture could not really *be* the body; like the verbal description, it was only *about* the body. It was a highly selective report, a rendering, a translation, with conventions of

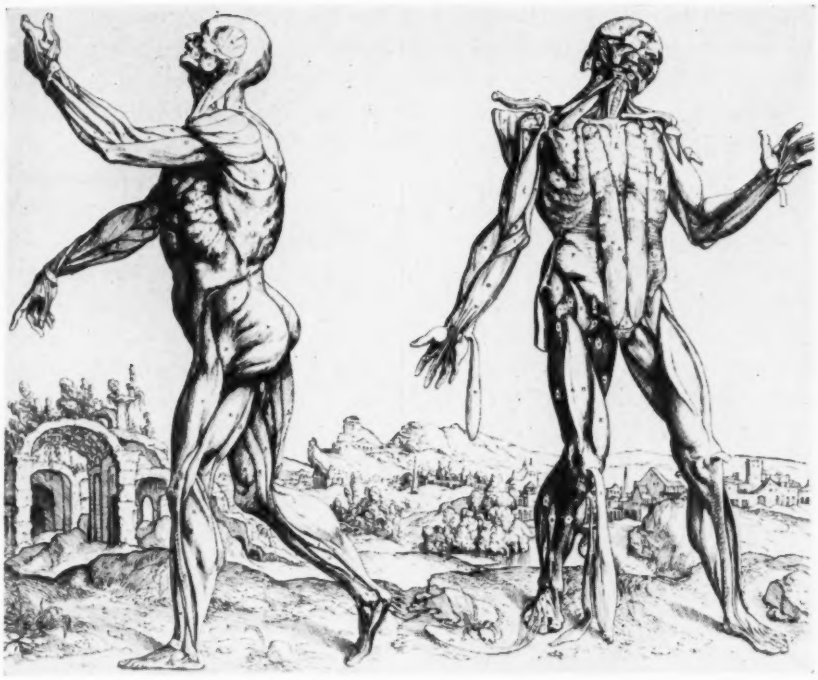

FIG. 5. Muscle Tables II and V from the *Fabrica*

its own, analogous to those of language itself. Yet for purposes of communication there were certain advantages arising out of this very limitation. Most of these are so obvious as to need no comment, but some attention to two in particular is essential to a full appreciation of Vesalius's achievement in the *Fabrica.*

Whereas multiple meanings with a penumbra of suggestiveness, or even entire absence of objective meaning, may be positive virtues in imaginative literature and poetry, the ideal of science must be a single, precise and unambiguous meaning for every statement. But a descriptive, non-mathematical science, even with the help of a technical vocabulary, cannot altogether eliminate ambiguity from its verbal statements, and cannot always insure that the verbal statement alone will have a meaning at all. These hazards are reduced in the physical presence of the object described. In the case of anatomy, the visual experience of following the dissector's knife or the demonstrator's wand provides a running interpretation of the lecturer's words, both giving them meaning and restricting the range of their possible meanings. But pictures can be made to serve both these purposes even more effectively, for the reason that the picture is itself a statement, while the incision and the pointing are not. Moreover, the picture says something which not only

cannot be said by operations, gestures and pointings, but cannot be said by words; so that it does not merely fix the meanings of the words as a facing translation into another language might, but makes a contribution all its own to a total meaning which the words could not convey alone. This relation between words and pictures is mutual; for pictures also suffer from ambiguity, and though words cannot say what the picture can, they can restrict the range of the picture's possible meanings. When words and pictures seem to say the same thing, that is an illusion produced by the interpretation of each by the other, so that together they convey an integral meaning not analyzable into a part conveyed by the words and another conveyed by the pictures, just as the integrated effect of binocular vision is not analyzable into a part conveyed by the left eye and a part conveyed by the right, and is certainly not identical with what either eye conveys alone. One of the great turning points in the history of education was the production of the first printed book of descriptive science so completely illustrated and with such a perfect mating of words and pictures as to produce this binocular effect throughout. The *Fabrica* was that book.[3]

But there was another potential advantage of the picture, also dependent on the fact that it was not the body; and in its exploitation of this second advantage the *Fabrica* was not merely the first of its kind, but remains unique. It was always a dead body that lay inert on the dissecting table, or at best was suspended for the vertical position. Even for the practical ends of the surgeon-to-be, this was a handicap in the days before anaesthesia; for the bodies on which he operated would seldom be inert. And from the point of view of the general physician, as from that of the renaissance humanist, the purpose of dissecting dead bodies was of course to know the fabric not of the dead body but of the living man. No doubt a teacher like Vesalius could and did appeal to the imagination of his students to make the translation; but it was not within his power to make it for them, or even to assure himself that they had made it. And as the dissection proceeded over a period of three weeks, the progressive decay of the body would overpower the senses of sight and smell, and inhibit any such effort of translation on the part of even the most hardened student.

By the help of Calcar and his assistants, however, this translation from the dead to the living body was made in the plates of the *Fabrica*. The muscle figures, for instance, were all animated, and the muscles exhibited in the state of contraction required to produce the movement in progress, and the position of the moment.[4] To enhance the illusion, the artists took or drew a renaissance panorama, divided it into sections, and superimposed the figures upon them.[5]

Even the skeletal figures seem miraculously alive. The spirit of the Lord had set the prophet of old in the valley of dry bones and asked,

"Son of man, can these bones live?" There was an earthquake, and the bones came together, bone to bone; and lo, there were sinews upon them, and flesh came up, and skin covered them above; and the breath came into them, and they lived, and stood up upon their feet. So wherever Vesalius taught, he articulated a skeleton, set it up above or beside the corpse that lay on the table, and invited his students to take the muddy vesture of decay which he anatomized before them, reknit its parts, made clean and sweet again, project it in imagination onto those dry bones, and breathe again into its nostrils the breath of life. But it must have been a rare student, even in the renaissance, for whom the miracle came to pass at the master's word. What the word could not evoke, the craft of artist, engraver and printer enacted in the *Fabrica.*

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The Artists of Vesalius's *Fabrica*

By Tom Jones

THE PURPOSE of this paper is to comment upon the illustrations in the *Fabrica* of Vesalius from the viewpoint of a medical illustrator, and to attempt to evaluate them as anatomic art and contributions to medical progress. It has always seemed to me that the illustrating of the *Fabrica* constituted one of the most significant and interesting events in all of medical history. As far as I have been able to learn, however, it is a story that has never been told. One searches in vain among the hundreds of books and papers written on Vesalius and the times he lived in for a satisfactory account of the making of this great series of pictures, which brings alive the text of the *Fabrica* and visualizes for the first time in recorded history the true structure of the human body. In all this literature certain more or less standardized material concerning the artists and their work is duly set forth and repeated with variations by each new author. Some of this is speculation and has been argued over for several hundred years. All of it is based upon a meager amount of authentic material and is at best dry stuff, having to do chiefly with disputed names and dates and throwing little light on a pioneer achievement of far greater consequence than is generally realized. For here was the genesis of anatomic illustration itself. These carefully wrought plates blazed the way for a profession that was destined to become a vital arm of medical education.

Had Vesalius written a preface of the kind we are used to now, and to which we turn for the author's acknowledgments, he might have told us something of the artists who labored with him and contributed so much to his *opus magnum*. But nowhere in its pages does he mention them. I have always held this against Vesalius. By not giving credit to his artist co-workers he evidenced a petulant and jealous side of his nature which is not an infrequent concomitant of genius. Some of his biographers suggest that this failure of Vesalius to acknowledge the

authorship of the plates was pique, since he is quoted as saying that the artists tormented him by their obstinacy until he felt more unfortunate than the bodies he dissected. It may be that he made his revenge complete by seeing to it that nowhere in the *Fabrica* did any signature or identifying mark appear on the plates. However, all of this was four hundred years ago and it is futile to deplore now the omissions either of the Father of Anatomy or of the scribes of his day. The majestic *Fabrica* still lives for all to see. Even today, measured by modern standards, it is an impressive volume. The powerful woodcuts combine perfectly with the beautifully set type of Oporinus, and four centuries have failed to dull its luster as an outstanding example of renaissance craftsmanship. One handles it reverently because here, in the oft-quoted words of Sir Wm. Osler, is "the greatest medical book ever written—from which modern medicine starts."

Few would probably take issue with the foregoing, but categorical statements invite challenge and I can imagine many students of anatomic art and medical history will be conscious at this point that no mention has been made of a giant figure which illumines the dark pre-Vesalian background. It is Leonardo Da Vinci, the first anatomic artist and the Father of Medical Illustration. Actually, the pioneer work of Leonardo preceded the *Fabrica* by many years and was an accomplishment of such originality and magnitude that he is called by some writers the founder of physiological anatomy. McMurrich observes that "Leonardo was the first to create a new anatomy, but he created it for himself alone; Vesalius demonstrated a new anatomy to the world." Priority here is an academic question and can be left to the historians. One title more or less cannot affect the glory that surrounds one who was supreme in so many fields.

By 1510 Leonardo is said to have dissected thirty bodies and to have made nearly eight hundred anatomical drawings which for accuracy and beauty transcend anything that was done for many generations after him. They were intended for a great treatise on anatomy which he and his friend Marcantonio della Torre expected to publish. It was a project conceived on a grand scale and contemplated a graphic anatomy of man from birth to old age in many volumes. His studies of the action of muscles and body mechanics, etc., indicate the scope of his great plan, which he had to lay aside under pressure of other interests and which he was unable to complete before his death in 1519. His dissections and drawings were done in carefully guarded privacy, and after he died the many portfolios of priceless drawings and notes were virtually hidden away from the world in the possession of his pupil and executor Melzi. Aside from a few fragments they did not come to light again for over three hundred years. During this time they lay stored away and neglected in the Ambrosian library in Milan and finally in the

Royal Library at Windsor. It was only through publication by modern photoengraving processes in 1902 that their existence became generally known.

To what extent the makers of the *Fabrica* plates and Vesalius himself were influenced by Leonardo's work is another controversial question. It does not seem likely that this influence, if any, was much of a factor. Leonardo had been dead for 18 years when Vesalius came to Padua from Louvain, and the young artists who were later to join him had little opportunity to see the master's drawings which had long ago been carefully stored away. Certainly their work in the *Fabrica* is about

FIG. 1. Jan Stephan van Calcar

as individual as any anatomic art I know, and it is free from any trace of plagiarism.

The full identity of the artists responsible for the *Fabrica* plates is not established to this day. It was a huge project which meant doing many hundreds of sketches and drawings from dissections, to say nothing of the labor involved in the making of the final engravings. A group of skilled artists was known to be employed, most of whom are not mentioned by name in the accounts. Vesalius himself seems to have had considerable ability in drawing and probably made some of the sketches himself to demonstrate his ideas on how certain structures should be represented.

Modern historians agree that chief among this group of artists was Jan Stephan van Calcar (fig. 1), who seems to have been responsible for most of the finished illustrations. Unfortunately, not a great deal is

known of him, although he was a remarkable artist and apparently highly regarded by his contemporaries. His career paralleled to an odd degree that of Vesalius. They both were Flemings, and both came from the Duchy of Cleves. Both journeyed to Italy as young men; Calcar to become the brilliant pupil of Titian in Venice, Vesalius to teach anatomy in nearby Padua. So far as we know, they met for the first time in Venice when Vesalius visited Titian for the purpose of securing his collaboration on his projected book of human anatomy. It has been suggested that Vesalius had seen some of Leonardo's sketches and was so impressed that he was unwilling to have his own drawings made by anyone but a master. Titian may have considered seriously doing the drawings himself. He was nearing sixty but at the height of his powers (he painted up to the time of his death at the age of ninety-nine), and was much interested in anatomy. Indeed he may have begun the drawings and later turned the task over to Calcar whose style was so similar to the master's that for two hundred years the illustrations were attributed to Titian himself. Calcar's paintings were said to have been beautifully executed, and it is related by Sandrast that they were sometimes mistaken for the work of Raphael, Titian and other great painters of the Renaissance. Rubens is said to have owned until his death a Nativity from Calcar's brush which he greatly admired. Undoubtedly he was a draughtsman of the first order and probably the most able artist, with the exception of Leonardo da Vinci, ever to apply his talents seriously to the field of anatomic illustration. Like Leonardo he studied the cadaver so thoroughly that he became an expert anatomist; some say as good as Vesalius.

Unlike Leonardo's, however, his work is known to us almost entirely through wood cut reproductions. The average layman unfamiliar with how pictures get into books cannot appreciate the significance of this. Our modern photoengraving processes are so highly developed and our printed illustrations so realistic and faithful to the original copy that we take them for granted and lose sight of the fact that up to about eighty years ago printed pictures were possible only from handmade engravings in metal or wood. This meant that the artist's original drawing was transferred or drawn upon the block in reverse and laboriously cut into the material by gravers or knives in such a manner that it could be inked and printed like type. Although handmade engravings and etchings later became a highly developed craft, in Calcar's day the only method of reproducing a drawing was by cutting it into a wood block. It would probably be clearer to say that the wood block was cut away from the image since the part which printed had to be spared and the spaces between the lines routed out so that they would not be inked when the roller passed over the plate. Obviously the printed result could only approximate the artist's original

which had been drawn in crayon, pen or brush on paper. The rigid limitations of the wood permitted the engraver only lines and relatively coarse dots as his technique for imitating the artist's copy. The technical skill shown in the engravings of the *Fabrica* is amazing. In spite of their stiffness and lack of detail they manage to be highly successful illustrations, and one can understand how they are regarded to this day as outstanding examples of wood engravings, apart from their interest as anatomic pictures. Nowhere does Vesalius identify these fine craftsmen or mention the important part they played in his enterprise. Some think that Calcar did his own engraving, but considering the amount of time required to cut one block it seems to me much more likely that several professional engravers were employed.

No attempt will be made here to discuss or critically analyze the *Fabrica* plates in detail. A few impressions come to me as I turn its hallowed pages, which may be pertinent to this paper and which may lead others to discover it and enjoy its riches. The second edition (1555) which is before me contains over 250 figures, not counting the famous frontispiece, portrait, initial letters and printer's mark. The larger plates are over thirteen inches high, and certain of them are remarkable for their beauty and accuracy. My own favorites are the three views of the skeleton shown in animated attitudes against backgrounds of charming landscapes. (A quaint custom of the old anatomic artists and one which I sometimes wish had not been abandoned.) These figures as well as certain smaller ones are the finest examples of the wood engraver's art to be found in medical literature. The bones generally are admirably illustrated and are superior to the soft tissue figures. This is easily understood, because the hard character of bone lends itself much better to the inherent limitations of the wood cut technique. Then too, since preserving fluids were not yet invented, bones made better subjects because artists and anatomists were not handicapped by the need for speed, as they were in studying the soft parts which decomposed rapidly as they worked. It was only the stout-hearted who could endure the atmosphere of the dissecting room.

Others have described the *Fabrica* in such detail that more need not be said here. I would only add that examining it is an interesting educational experience and should be required of all students of medicine and medical illustration for the good of their souls. The first edition is rare and can only be seen in such collections as the Army Medical Library. Later editions and reprintings are available in most of the better medical college libraries.

If the complete story of the illustrating of the *Fabrica* is ever told it will make good reading. Some future student of the renaissance may visualize for us how, against a background of one of the greatest periods in history when art, literature and science were being reborn,

a small group of earnest men made possible under difficulties a great book which was to advance human welfare beyond calculation.

I have tried in this paper to set down some thoughts and observations on the artists of the *Fabrica* from the standpoint of the medical illustrator. I hope that what has been said is also a tribute to them. Too many of the biographers of Vesalius have left the impression, perhaps unwittingly, that the work of these men was but an expression of the great anatomist's own genius and an incident in the Vesalian epic. It was far more. Rowlandson, speaking of the *Fabrica,* says, "The dissections and the plates are the book." We should remember that Calcar and his brother artists labored long and well to make these plates. In doing so they contributed in their own right something of great value to mankind—something worthy of our eternal gratitude.

The Woodcut Initials of the *Fabrica*

By Henry Sayles Francis

URING THE fifteenth century, in the region of southern Germany, the format of the printed book of the western world was evolved, based to a large extent on that of the medieval manuscript. The rich ornamentation of manuscripts dates from remote antiquity, from Greece, where the tradition later passed to Rome, and thence, in medieval times to western Europe. The custom of embellishment was handed from one group of artists to another, most of these craftsmen working either as members of the Christian church, or under its protection, largely in monasteries, in the later medieval times.

Drawn and painted on vellum or parchment, usually of relatively large dimensions, the manuscript not only included many pages of carefully, tirelessly copied script, but many border embellishments, some purely ornamental, some definitely illustrative of the text; and at the beginnings, or in important locations, there were full-page illustrations brilliantly illuminated in precious colors and gold, as complicated in technical structure as larger easel pictures. Initial letters also were as elaborate as these full-page illustrations, usually containing subjects interlaced with the initial.

It is known that these miniatures, so-called, of the medieval manuscript, followed the fashion of the rich volumes transcribed by the copyists of Athens and Rome. The Byzantine tradition intervened, followed by Charlemagne, whose hospitality afforded men of letters encouragement and shelter, inviting the great Irish and Anglo-Saxon illuminators to Aachen, men who from the sixth century made a study of calligraphy, and were celebrated all over Europe. Much of this early style took the form of interlaced chequer-work or arabesque foliation resembling Gallo-Frankish jewelry. Manuscript styles flourished all over western Europe—England, Ireland, Germany, France, and Spain.

Since the manuscript was an expensive and necessarily limited record of great learning, it was but natural a more universal substitute should

eventually appear, the demand arising simultaneously with the revival of learning—the renaissance movement, and with the improvement in paper-making and the invention of movable type. Thus, the modern book appeared.

The aim of the first book-makers was to approximate the great craftsmen of illumination, and to produce, more modestly, the fine style of manuscripts, conforming to the limitations of printing and at the same time striving to be worthy of the tradition.

Printing in Europe, the discovery of which is associated with Coster and Gutenberg, goes back to about the year 1440. It was subsequently

FIG. 1. Large initial Q from the *Fabrica* (1543 and 1555)

perfected by Fust and Schoeffer, who tried beyond the pure letterpress conception of the 42 line Bible to follow the manuscript style throughout. Their Psalter of 1457, with over two hundred capitals in two colors, besides the great initial "B," form a perfect imitation of a highly decorated manuscript. Gunther Zainer, in Augsburg, was perhaps one of the first who gave up the complete imitation of the manuscript. Whoever was responsible, it came about certainly as a general practise in Augsburg, as a gradual change spreading through Germany and to the South.

The city of Basel, on the borders of Switzerland and Germany, was one of the chief centers of this early bookmaking, and printing was introduced there before 1468, though no book bears a printed date earlier than 1473. After the turn of the century, the city became even more prominent in this respect, especially when Erasmus allied him-

self with the great Basel printer, Johann Froben. So much so that for a period in the second quarter of the century, Basel fell heir, as Pollard remarks, "to the typographical supremacy which Venice was fast losing." Basel, therefore, as a vital center of bookmaking, attracted many artists by reason of its great publishing houses, which could always furnish a livelihood for designing in this manner, for new editions of the classics, treatises, and writings of the great reformers. Though in many instances the scholarly publications provided only occasional opportunities for illustrations, the desire for beautiful pages and make-up

FIG. 2. Large initial O from the *Fabrica* (1543 and 1555)

found an outlet in elaborate borders to titlepages, headpieces, tailpieces, and ornamental capitals.

From one of its most noted publishing houses, that of Oporinus, there issued in 1543 the "Anatomy" of Vesalius, entitled *De humani corporis fabrica*. . . . In turning over the beautiful folio leaves of that cherished book one is greatly impressed not only by the marvelous full page anatomic illustrations for which it is world renowned but also by the animated initial letters that enhance the beauty of the text. Upon closer examination these initials are seen not only to contribute to the typographic excellence of the book but also in their continuity to relate a story of the difficulties encountered in the sixteenth century in the study of medicine. An even closer scrutiny reveals the physicians practising the art of healing and experimenting with vivisection for the furtherance of anatomic and physiologic discoveries, and, indeed, in a

very subtle way, they supplement the anatomic plates illustrating textual materials.

The two series of ornamental initial letters, which appear in the Vesalius "Anatomy," depict children who, with inimitable seriousness are acting as medical consultants. There are four large ones, Q (Fig. 1), O (Fig. 2), I (Fig. 3), and T (Fig. 4), measuring 73 mm. square, to be found at the beginnings of the seven books of the text; and a group of seventeen smaller ones heading the chapters: A, C, D, E, F, H, I, L (Fig. 5), M, N, O, P, Q, R, S (Fig. 6), T and V, measuring

FIG. 3. Large initial I from the *Fabrica* (1543 and 1555)

39 x 41 mm. The designing of these initials, especially the larger ones, is supposed to have been done by the Flemish follower of Titian, Jan Stephan van Calcar, who also designed the plates.

Calcar was born in a town of that name in Flanders in the province of Cleves, about 1499. He is recorded as living in Venice, in 1536, according to the historian van Mander, "with a girl from Dordrecht whose parental home was a hostelry frequented by cutthroats and murderers," from whom she had fled. Calcar, studying under Titian, developed a technique of drawing and painting so much in the style of Titian that many of his works passed, and still do, especially portraits, for those of his master. Rubens, who once owned an "Adoration of the Shepherds," now in the Vienna Museum, had an enduring admiration for this picture from which he would not be parted, which in itself is a measure of real praise.

There was in Calcar's technical style little of Flemish origin; and as a draughtsman, especially in the matter of the human figure, or as a portraitist, he was thoroughly accomplished in the Italian sixteenth-century manner. His greatest work was the magnificent series of anatomical drawings done for Vesalius, which, to date, have rarely been surpassed in their attainment, if ever. These monumental scientific drawings of the muscular and bone structure of the human body were made by van Calcar, against a diminished but connecting landscape background, possibly representing the environs of Verona, and he did,

FIG. 4. Large initial T from the *Fabrica* (1543 and 1555)

as well, a frontispiece representing a lesson in anatomy, and a portrait of Vesalius.

The woodcuts (referred to by Vesalius himself as engravings), after these drawings, magnificent and faithful translations in themselves, were in turn made under Calcar's close supervision; it is even possible Calcar did some of the cutting himself, considering the skill and accurate mastery of detail. There was, currently, little record made of the individual work of the fine craftsmen who more often than not did the translating; and we are therefore without knowledge of many of these artists. Since, however, Dürer and many other great artists of the time knew the technical details well, and practised them furthermore, it is plausible to believe Calcar instrumental in creating in part these great woodblocks himself.

Vesalius taught anatomy at the University of Padua, nearby to

Venice. Vesalius was naturally drawn to Calcar, as Vasari puts it, "by the amazing art with which he drew from the dissected body before him" the anatomical plates of which the first—the *Tabulae Anatomicae*—were distributed as "fugitive" or loose sheets to Vesalius's students. It was the existence of these first drawings which created the idea of the treatise which Vesalius eventually caused to be published, and which came to be considered a monument in the field. Anatomical treatises had existed prior, such as J. de Ketham's *Fasciculus Medicinae,* 1493,

FIG. 5. Small initial L from the *Fabrica* (1543)

FIG. 6. Small initial S from the *Fabrica* (1543)

that of Laurentius Phryesen in 1518, and others; but their accuracy could hardly be considered in the same class.

Among the earliest designers and woodcutters to come to Basel was Urs Graf, a follower and admirer of the great Dürer, from Nuremberg. The latter master had currently everywhere an unquestioned influence upon the woodcut designers in south Germany. His only peer, Hans Holbein the Younger, was working in Basel in 1516, employed by the publishers to do initials and illustrations apart from his painting. Holbein commenced his woodcut designing in the style of Graf, animating the background, surrounding his ornamental initials with children masquerading in every occupation of life, some nude in the classical style of

the renaissance; others, again more seriously clothed in the Gothic tradition. Holbein added a greater scope to the other artists' work in the variety, the greater clarity through freer composition, design, and technique of rendering. His models at length became the standard of the Basel printers.

It should be noted at this point, however, that the invention of printing, which revolutionized in so many ways the life and times of fifteenth-century Europe, did not immediately put an end to the profession of the rubricator and illuminator. Some printed works of the end of the fifteenth and the beginning of the sixteenth centuries were embellished with miniatures of the very highest merit and illuminated letters of great beauty. There is, among the early books in the Army Medical Library, a case in point, in the edition of the Greek text of Galen, published in 1525 in Venice by the Aldine Press, where the initials have been left with no printed design or capital, to be supplied by the hand of an illuminator, which, in this case, was never carried out.

Eleven years later, however, in 1536, when Cratander published a Latin translation of Galen's works, in Basel, he used principally the initials by Holbein, and some from the Greek Lexicon of René Gelli. The same was true of the Basel Greek text of Galen, also published by Cratander, in 1538, both of these books also being in the Army Medical Library.

Oporinus was himself the son of a painter named Hans Herbster. Little remains of Herbster's work; we know nevertheless that he was a member of the Guild of Painters in Basel in 1492, and welcomed Holbein upon his arrival in that city. Oporinus was consequently familiar with the work of artists like Graf and Holbein, and would naturally have turned to these local craftsmen.

When it came to the point of considering a publisher, Venice was, though adjacent, no longer the great book center, and Vesalius turned to Basel and Oporinus. The latter appears to have approved the greater variety and scope which Vesalius wished to achieve in planning the book, and gave the author a free hand. Whether he wished it or not, from the record, it would seem as if Vesalius, being obviously a domineering personality, would have assumed it anyway. The extensive layout included the spacious text, the inclusion of the plates, frontispiece and portrait, and the decorative feature of the initials. Vesalius undoubtedly hoped for a reasonable advantage with the venture, but probably never realized that the collaboration with Calcar, and the beauty of the artist's plates, would result in the great success that occurred. A certain prestige could be counted, upon the reputation of a publishing house like Oporinus; and both author and publisher seem to have worked out the various preliminary steps in relative harmony. The interesting letter from Vesalius to Oporinus, of August 1542, printed

after the dedicatory letter to the Emperor Charles V, in the 1543 edition of the *Fabrica,* came when the cuts were finished.

> You will receive in a short time together with this letter, through the merchants Danoni of Milan, the engravings to go with my books *On the Structure of the Human Body* and the *Epitome* of these. I only wish they may reach Basel undamaged and in a condition of security commensurate in some degree to the pains I have been at in preparing them, a task in which I have been ably seconded by the engraver and by Nicholas Stopius, the trusted business agent of the Bombergs in this town and a young man of no mean accomplishments along scholarly lines. I hope they will not be bruised in any way and that the journey may not cause them any sort or kind of damage. In among the series of engravings I have distributed the text by pages, together with proofs of each of the figures, adding directions to show where each belongs in the finished work, as a safeguard to prevent the order and distribution of these from causing any trouble to you or your workmen and the figures from being printed out of the proper order . . . [detailed instructions for matching descriptions with blocks, lettering descriptions, etc.]. . . . Particular pains must be used in printing the engravings, since these are not made in the common and ordinary manner and as it were in outline only; neglect nowhere the matter of the picture (even if you do occasionally omit the text on which the illustrations are based). And although in this respect you are a most capable judge, and I have the most complete confidence in your industry and pains, I should particularly desire this one thing, that in printing, you would follow as nearly as possible the printed copy sent by the engraver in place of his own draft and enclosed with the woodblocks. For this will insure that no character, however much in the background, will escape the keen-sighted and attentive reader, and that that feature which is most artistic about these pictures and to my eye exceedingly attractive, I mean the thickness of the lines, together with the nice shadings, will be clearly apparent. But there is no need for me to write you at length about these matters, since it depends upon the smoothness and firmness of the paper, and particularly upon the carefulness of your workmen, that after the pattern of this copy which we now send you and which we have several times printed here, each detail should be issued by your shop to the general public and become common property. I will do my best to make the trip to your city before very long and to remain at Basel, if not during the whole time that the work is in press, for some time at least. . . .
>
> . . . Such are the chief reasons why I have prepared these woodblocks at my own expense; and now again and again I urge you to take care that they shall be exactly and clearly printed.

Returning to the initials, stylistically the four largest bear a superficial resemblance to those by Hans Holbein and his brother Ambrosius, in such publications as the philological treatises by Valentin Curio, the "Galen" of Bebelius and Cratander (1532), and other current works. But they seem more spacious and seem to have been contrived with more effort to present a full composition dealing with specific and con-

nected subject-matter, than to provide only incidental or humorous comment, like the Holbein's already mentioned. In the initials T (Fig. 4) and I (Fig. 3), the spaces behind the letters are entirely filled with a subject composition; in the case of the T, children stringing up a dog for purposes of experiment. The initial T, placed in front of a ruin, is used as a gallows over which is slung a rope, with two putti at the right pulling the creature up. Its nose is bound, and the other putti hold it from struggling while one to the extreme left grasps a club with which to kill the animal. Rosenkranz sees in the small V on the ploughshare at the lower right (Fig. 4), a signature of the woodcutter, working for Vesalius and Calcar, the only evidence of such authorship to be found on any of the pieces. It undoubtedly is a signature; but at best the author remains anonymous.

The letter I (Fig. 3) is a subject the meaning of which is rather difficult to determine. Whether the putti are robbing a grave or hastily burying a body is hard to make out. A figure at the left holds a candle over others lifting a body in or out of the grave at the lower left; behind, in front of arches of masonry, stand soldiers, one helmeted and holding a spear, while at the right one is running away from the scene with a pennant. The whole incident is an indication of the difficulty under which the student of medicine in the sixteenth century practised anatomical studies, overcoming religious scruples, superstition and mistrust.

The letters Q (Fig. 1) and O (Fig. 2), though measuring the same size and carried out with an identical use of horizontal shaded lines in the background, with short curved lines of shading in the bodies of the putti and with the subject-matter contained within the circle in the middle of the letters, differ in the outside and corners, which are taken up in the Q with two seraphs above and two putti beneath; and, in the O, with foliate and griffon patterns. Rosenkranz would see in this a transition from what he calls "pure" illustration to "decorative" illustration, to the complete foliate designs for the initials which appear in later editions. Since the subject designs are found both as early and as late as the foliate, this can be less an indication of change of style than an effort for more variety.

The center subject of the Q, which commences the preface of the *Fabrica,* represents an operation or vivisection on a young pig, the animal on its back chained to a table through the mouth, with the left foreleg fastened by rings to the tableside. To the left is a figure holding an open book. One putto bends over the animal with a scalpel about to make an incision in the animal's neck, in order to perform one or another of Galen's experiments, either the division of the vagi nerves, to show their control of the voice—according to W. G. Spencer; or the performance of tracheotomy and the examination of the mechanism of breathing. Another suggestion by Singer for the Q is the opening of the

trachea, as Vesalius describes how the animal may be kept alive by the action of a pair of bellows inserted in the trachea even if the thorax is opened. The surrounding figures suggest a clinic, to whom the operation is explained by the reader by steps. There is no initial in the entire text that does not allude to some part of the treatise.

The O shows a room with a renaissance fireplace in which a cauldron hangs over a brisk fire blown by the putto to the left with a bellows. The figure in the center is in the act of placing a skull in the kettle, while a third holds a thighbone. The scene represents the maceration of parts of the skeleton through boiling.

FIG. 7. Large initial V from the *Fabrica* (1555)

When, however, one comes to the second Basel edition of the book, published also by Oporinus, in 1555, besides the four large capitals of the 1543 edition, there is a large V (Fig. 7) which seems not only undoubtedly to have been cut but also to have been designed by another hand than the first group of four. It shows a distant landscape with mountains and sky, and nearer, three individual groups surrounding the letter V. In style it belongs with the smaller series of initials in the second edition, which correspond to those of the first but use landscape backgrounds throughout. The designs, especially in the case of the smaller alphabet, are more composed; the cutting more skillful, and the spirit indicates the Venetian School of the sixteenth century. In the V the subject is no longer strictly scientific; a classical theme is introduced, the distant group between the arms of the V representing the contest

between Apollo and Marsyas to see who was the more skillful musician. Apollo, the winner, could do what he wished with Marsyas, the vanquished, and accordingly flayed Marsyas for his impertinence, a scene which appears at the right. Wearing the laurel wreath, Apollo has Marsyas tied to a tree while two Muses, who were judges of the contest, view the scene from the left. In the right foreground are the dis-

FIG. 8. Small initial L from the *Fabrica* (1555)

FIG. 9. Small initial S from the *Fabrica* (1555)

carded flutes and clothing. This subject would appear to be a direct hit at Vesalius's critics.

Returning again to the earlier edition of 1543, we have in the smaller initials, although in more modest fashion, somewhat the same idea as Calcar's designs for the larger examples. Since tradition gives these small initials to Calcar, we accept the authorship. Nevertheless, they appear to be very closely allied to the Basel initial style of the Holbeins. It is possible that when designing the format, Oporinus suggested to Vesalius the use of the current type of Basel initial as a model. By and large they seem cramped and less carefully worked out than those of the second edition, though the narrative scenes are thoroughly

engaging. They represent, in the three here illustrated, the sawing open of a head, in the D at the beginning of this article; a removal from the gallows, the L (Fig. 5); and an experiment in bloodletting, the S (Fig. 6).

These chapter initials were divided in subject-matter into three groups; first, the obtaining of cadavers from burials or from the execution of persons or animals whether by sword or strangulation; secondly, autopsies and vivisection, especially D, Q, S and T; and thirdly, the treatment of fractures of legs, and various operations, childbirth, and so forth, as in the letters E, F, H, I, V and A.

In all, the subjects are treated at close range; if out of doors, in foreground settings, or if inside, close at hand so that the effect is one of intimate and confined areas. When comparing the L (Fig. 8) and the S (Fig. 9) of the second edition with the L (Fig. 5) and S (Fig. 6) of the first edition, we have the sensation, in the second edition, of a much greater feeling for composition, and that a different hand made the cuts. There is no doubt that the small initials of the second edition were especially designed and cut for that edition, since their slightly larger size was dictated by the larger type and more widely spaced lines of that edition. Calcar was now dead, and can have had no part in the designing of the new initials. The work was probably done by a Basel artist, working under the direction of Oporinus. It was undoubtedly the same artist who designed the large V for the second edition. There is no clue as to his identity.

. . . . . .

Note: Besides the initials used as illustrations in Mr. Francis's article the following are used to begin the other articles in this issue: Small I from the 1543 *Fabrica*, and small A, T, and I from the 1555 *Fabrica*.

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The Printer of Vesalius's *Fabrica*

By MAX H. FISCH

IN THIS quatercentenary year of the founding of modern anatomy by Vesalius's *Fabrica* in 1543, it seems proper to pay tribute not only to its author but also to its printer, for the book is one of the great monuments not only in the history of science but also in that of the printed book. It is the master work of Johann Herbst as well as of Andreas Vesalius.

Herbst came of a Strasburg family. His paternal grandfather had been a well-to-do magistrate of that city. This grandfather had set his only son to the study of the liberal arts, but his generous designs were thwarted by the spite of the boy's stepmother, who contrived to have him sent away from home and apprenticed to a notary. While living with the notary, the lad devoted himself so completely to acquiring an ornate script that the notary's son, a painter, persuaded him to take up painting. On learning of this aberration, his angry father told him he wished never to see him again. Sometime before 1492, he went to Basel and found work with a painter there. When his father died, the heir was sought; but his master, when asked if he had with him a young man from Strasburg, denied all knowledge of him, for fear of losing the profits his paintings brought in. He later set up as a painter in his own right, and married Barbara Lupfart, who brought him no dowry but her domestic virtues. They had four children, three daughters and one son. The son, Johann Herbst, the future printer, was born at Basel on January 25, 1507.

Though the income of Johann's father was scarcely adequate for a growing family, his work was highly prized, and his studio was the place of first resort for young artists who came to Basel to find employment. The Holbeins, Ambrosius and Hans, seem to have made their start there about 1515; and Hans painted the master's portrait in 1516. For Oswald Molitor of Lucerne, Hans decorated a copy of Erasmus's

Praise of Folly with marginal sketches. He was assisted in this by Ambrosius, and probably by other members of Herbst's studio. The work was admired by Erasmus, and his printer and friend Johann Froben began to order drawings, frontispieces and initial letters from the young artist. Other printers followed suit, and Hans was soon working for Cratander, Curio, Wolff, Adam Petri, and Johann Bebel, as well as for Froben.[18]

It was in this circle of artists and printers that Johann Herbst grew up. He was intended at first for a painter like his father, but he showed such promise in his school studies that he was sent to Strasburg to be educated at the *Contubernium pauperum scholasticorum,* a boarding school for poor-scholars, where he studied Latin and Greek for four years under Hieronymus Gebwyler. He then returned to Basel to pursue his studies at the university there; but his father's straitened circumstances led him to accept a subordinate instructorship in the Cistercian school at St. Urban's in Canton Lucerne. There he came under the influence of Canon Zimmermann or Xylotectus, who shortly gave up a very comfortable living to go over to the Reformation. When Zimmermann married and moved to Basel, his young protégé followed and resumed his studies there, supporting himself by copying manuscripts for Froben's press. He was set to work especially on the Greek theologians, and helped prepare the text for Erasmus's edition of Irenaeus among others. Erasmus took a liking to him, and supplemented his income from Froben with occasional gifts.

In the fashion of the time, young Herbst sought a classical equivalent for his family name, which meant autumn, and found it in Martial's epigram beginning *Si daret autumnus mihi nomen, Oporinos essem:* "Were Autumn to give me my name, Oporinus should I be."

Oporinus, as he thenceforth called himself, was soon employed as a teacher in the Latin school of St. Leonard, and later at the cathedral school, while still continuing his own studies. He learned Hebrew under Thomas Platter, and made a promising start at law under the famous jurist Boniface Amerbach, the friend of Erasmus and later his heir.

Meanwhile his friend Zimmermann died of the plague on August 6, 1526, and Oporinus, to honor his memory (and perhaps also to have money for completing his studies), married his widow. He was then a young man turning twenty, and she was an old and ill-tempered woman. He often compared himself with Socrates, who learned philosophy from Xanthippe.

These were the critical years of the struggle between Catholics and Protestants at Basel. The Town Council was already predominantly Protestant. The Catholics still retained control of the university, but were losing ground. Oecolampadius, second only to Zwingli among the Swiss reformers, had been made professor of theology in 1523, and

was exerting his great influence to pattern Basel after Zurich. As the reformation advanced, and with it the hostility against representations of the saints, it became more difficult for painters to earn a living. Holbein left in the fall of 1526, and Oporinus's father became increasingly dependent on his son's earnings. It seemed necessary to cast about for more remunerative employment.

Some months previously, the printer Johann Froben, for whose press Oporinus served as corrector, had disabled his right foot in a fall; and he was suffering as much from the rough and ignorant treatment of local physicians as from the original injury. In the summer of 1526 the pain became acute and amputation was suggested. The great physician and surgeon, Paracelsus (Theophrastus Bombast von Hohenheim), was then at Strasburg, and his fame had reached Basel. Froben sent a messenger to Strasburg to fetch him, and Paracelsus arrived about August and took up residence in Froben's home. Under his expert hand a cure was soon effected, and Froben was not only able to walk but ventured to resume the long journeys necessary to his business as printer and bookseller. Erasmus, impressed by the cure of his friend, consulted Paracelsus by letter (though he was then living in Basel), and received a diagnosis of his gout and liver and kidney trouble which he thought remarkably accurate in view of the fact that Paracelsus had seen him but once. Whether he proceeded to put himself under Paracelsus's care, we do not know; but it seems probable that he lent his influence to the proposal which Oecolampadius and Froben made to the Town Council, that Paracelsus be offered the post of town physician, which was then vacant, and which carried with it a lectureship on medicine in the university, and supervision of the town apothecaries.

The offer was made, and Paracelsus accepted. He returned from Strasburg to take up his new duties toward the end of 1526. Early in 1527 he began lecturing on medicine in the university, and at once aroused bitter opposition by two innovations. As Oecolampadius and the other reformers preached in German, so Paracelsus lectured in German. And instead of lecturing on the canonical systems of Galen and Avicenna, he taught out of his own experience as a physician, surgeon, and chemist. Oecolampadius now urged Oporinus to enter on the study of medicine, and recommended his employment as famulus and secretary to Paracelsus. This of course involved living with him, and therefore a welcome separation and relief from his shrewish wife.

His new employment, however, brought him no peace. The opposition to Paracelsus in the medical faculty of the university was open and continuous from the start. He was not admitted to the faculty, which had had no voice in his appointment, and he was prohibited from teaching until he secured an injunction from the Town Council forbidding any interference. After that the faculty continued to stir up trouble

for him among his students, who must in any case have been disturbed by the contrast between his teachings and those of the professors. The death of Froben in the fall of 1527 not only deprived him of one of his chief supporters, but gave his enemies a ready weapon of attack. Though it was caused by an apoplexy brought on by a journey on horseback, against the physician's advice, to the book fair at Frankfurt, it was attributed by the enemies of Paracelsus to an overdose of "laudanum" or some other of his newfangled remedies. At the beginning of 1528 a lampoon against his "holy laudanum" was circulated, and shortly afterwards another, "The Shade of Galen against Theophrastus, or rather Cacophrastus," was posted on the doors of the new Exchange, the cathedral, the church of St. Peter, and the church of St. Martin, where Oecolampadius was pastor.

About the same time Paracelsus healed a wealthy canon of the cathedral, Cornelius von Lichtenfels, who in desperation had promised a hundred gulden for a cure, but after his rapid recovery put his doctor off with six. After a vain appeal to the law, Paracelsus wrote an angry fugitive sheet in which he denounced the court in such terms as to make himself liable to severe punishment; and, on the advice of his friends, he fled from Basel at night to avoid arrest and imprisonment.

From the end of February until sometime in July, 1528, Paracelsus was at Colmar in Alsace. Oporinus, after settling his master's affairs in Basel, followed, apparently drawn by the promise that another six months would complete his medical education, and that Paracelsus would reveal to him the secrets which he had so far withheld. Paracelsus hired a lodging with a cellar and set up his laboratory there. He was soon busy experimenting, dictating to Oporinus, and treating patients in Colmar and the surrounding territory.[27]

It is to Oporinus that we owe the traditional picture of Paracelsus as a charlatan, a drunken braggart and blasphemer, given to practical jokes at the expense of his underlings, performing his miraculous cures and spinning out his high-sounding theories by a kind of half-mad genius, with no firm foundation of science or scholarship. The tradition rests chiefly on a famous letter which Oporinus wrote to Johann Weyer in 1555, and to which we shall come later; but its origins go back to the oral accounts which Oporinus gave to his friends and acquaintances. He said, for instance, that his master had only a slight command of Latin, through he could rattle off whole passages of Galen from memory. When he took his pupils on field trips to collect herbs, if they came upon a plant whose name he did not know, he always said it had no medicinal use. Since he never made any corrections in Oporinus's Latin versions of the material he had dictated in German, he must either have attached no precise meaning to his own German, or none to Oporinus's Latin. He would come home drunk toward midnight, and

for half an hour or so he would seem to do battle with ghosts, laying about him with drawn sword to the terror of Oporinus, who had his bed in the same room. He would then begin dictating at high speed, as if by daemonic inspiration, standing like a column with the point of his sword grounded and his hands closed on its hilt, whose hollow housed the familiar spirit he called Azoth, which was perhaps only his laudanum. He had a rough and cruel sort of humor which the naïve young Oporinus was not equipped to enjoy. When Paracelsus declared, against the opinions of other doctors, that a man's temperament could only be determined by the alkalinity of his urine after he had abstained from food and drink for three days, Oporinus in all seriousness abstained for three days, and then brought his master a meager specimen of urine and asked for his analysis. But he only laughed, called his famulus a fool for submitting to the ordeal, and dashed the phial against the wall. On the whole, it seemed that Oporinus had no flair for medicine, and indeed Paracelsus told him that he would not stick to it, but would take up another profession.

When Paracelsus made ready to leave Colmar and resume his wanderings, Oporinus returned to Basel with a deep sense of frustration. So deep in fact that in most of what he later said and wrote about his former master he was unconsciously justifying his own renunciation of the lucrative profession that had seemed to be opening before him. He went back to teaching, and probably to correcting for the press, though Froben, who had employed him earlier, was now dead. His reputation as a classical scholar began to grow. He found a friend and supporter in Simon Grynaeus, the distinguished Greek scholar whom Oecolampadius brought from Heidelberg to Basel to replace Erasmus when the latter left in 1529. In 1533 Oporinus was appointed professor of Latin in the university, and in 1534 he edited at least two Latin works for the press, as the first fruits of his professorship. In the same year there appeared his edition of the works of Plato, the first after the Aldine *princeps* of 1513, with a prefatory letter by Grynaeus. It does not appear that Oporinus used any manuscripts, but he succeeded in correcting many of the mistakes in the Aldine edition, though some of his alterations were corruptions of sound passages. The edition was enriched by the inclusion of the commentaries of Proclus on the *Timaeus* and the *Republic,* which Grynaeus had discovered at Oxford, and three Greek indices compiled by Oporinus—one of words and phrases, another of proper names, and a third of proverbs to be found in Plato.

In the summer of 1535, when Erasmus returned to Basel after an absence of six years, he was warmly greeted by the university with a gift of hippocras, malvoisie, and other spiced wines, and saluted by a delegation of professors. Oporinus had been chosen to make the speech

of presentation; but in greeting the guest he pressed his hand so hard that Erasmus, who suffered from gout, cried out: "How you hurt me!" Oporinus, in his embarrassment, was unable to remember the speech he had so carefully prepared. But when Erasmus spoke to him kindly, and insisted on his drinking the first cup of the wine of honor, he recovered himself and performed his task to the satisfaction of all. A year later the great humanist died and was laid to rest in the cathedral at Basel.

In 1537 Oporinus was made professor of Greek and dean of the recently established *Paedagogium* or *Collegium Sapientiae,* a college of liberal arts, where his friend Thomas Platter had already been teaching Greek since 1534. For some time Oporinus lectured with great skill and clarity on Plutarch's *Lives,* until it was agreed that Platter should be responsible for the prose writers and Oporinus should confine himself henceforth to the poets.

This at last was a position of honor and influence in which Oporinus might well have been content to spend the remainder of his life. But in 1539 it was decreed that the members of the university faculty must already possess or proceed at once to secure their doctor's degrees. At thirty-two, Oporinus was already a mature scholar, and along with some others who were no longer quite young by the standard of the time, he was unwilling to submit to this requirement, and withdrew from the university, to become the leading German printer of the generation after Froben, and next to Robert Estienne the leading scholar-printer of Europe. His friends tried to dissuade him from giving up his teaching career. Boniface Amerbach, friend and heir of Erasmus and leading jurist of the day in Basel, urged him to complete his legal studies and promised him a professorship of law. Oporinus had attended Amerbach's lectures and delighted in his skill in illuminating the law by reference to the sounder philosophers of antiquity, Plato and Aristotle; but he had no taste for "those fickle disputations on either side of cases," and preferred a life removed from the atmosphere of litigation. As late as September 12, 1540, he was called before the regents and offered the post of superintendent of schools with an income of eighty gulden a year, plus a third of the fees collected from the pupils. But by that time his commitment to printing seemed irrevocable, and he was not to be turned aside. For the remaining thirty years of his life, he found full scope for his scholarship in the making of books.

It is possible, indeed, that the crisis in the university merely precipitated a change of vocation to which he would soon have been led in any case. For as early as 1536 he was already giving part of his time to a printing business in which he was one of four partners. The story is best told in the words of another of the partners, his friend Thomas Platter.

The printer Johann Herwagen the elder had lost his corrector, and had prevailed upon Platter to devote to this work such time as he could spare from his duties as teacher of Greek in the *Collegium*.

> But as I saw that Herwagen and the other printers had a good thing, winning big returns for little work, I thought I might do well to become a printer too. Oporinus, who had also done a good deal of correcting for the presses, was of the same mind. And there was a good typesetter, Balthasar Ruch, a man of high spirits and a good friend of ours, who was all for joining us. We had the will, but we had no money. But there was Oporinus's brother-in-law, Ruprecht Winter, whose wife took a fancy to being a printer's lady when she saw what a fine figure the printers' wives cut, putting her in the shade. She had enough as it was, but she wanted more. So she persuaded her man Ruprecht to become a printer along with his brother-in-law Oporinus. The four of us accordingly became partners: Oporinus, Ruprecht, Balthasar and I. We bought up the equipment of Andreas Cratander. He and his son Polycarp had become printers, but his wife wanted them to give up the dirty business, as she called it. He sold us the equipment for 800 gulden, to be paid within a certain time.

This must have been in the year 1536, since that is the date of the first books with the imprint, some of Platter and Lasius (i.e., Ruch), others of Winter. Among the former was the first edition of the *Institutiones Anatomicae* of Vesalius's teacher, Guinterius of Andernach. In the following year, 1537, Vesalius himself must have come through Basel on his way from Louvain to Venice. He had published his Paraphrase of Rhasis at Louvain in February, and a second edition was published at Basel in March, with the imprint of Ruprecht Winter. Of the four partners, Oporinus had the best knowledge of medicine, and probably corrected the proof for this edition, as well as for the *Institutiones* of Guinterius. Vesalius must have formed a favorable impression of the work of press and corrector, for two years later, in April, 1539, he had his epistle on blood-letting published under the same auspices. In another book of this year, Oporinus's name appears for the first time along with Winter's in the colophon. Perhaps it was only after the university crisis in that year that he felt free to come before the public as a printer of books.

The partnership of four was financially unsuccessful. Partly from bad management, and partly from the extravagance of their wives, they found themselves getting deeper into debt. They often worked Sundays and holidays, and late into the night, and became irritable under the strain. Ruch in particular resented Platter's proof reading. "No matter what we do," he said, "it doesn't suit you." After eleven one evening at the press the two had a bloody fist fight, which Platter describes with great gusto in his autobiography; and a few weeks later the partnership broke up.

Oporinus and Ruprecht printed together for a time, and then they separated too. Ruprecht went on by himself against my advice, until he lost everything; for he had no head for business. Balthasar was ruined too, and his creditors lost several thousand gulden on him. Oporinus stuck it out the longest, but in the end a good deal was lost on him too.[17]

Oporinus not only outlasted his early partners, but far outstripped all other Basel printers of his time in volume and quality of production, and in international reputation. This was not due to the superiority of his publications from the point of view of typography and design; for,

FIG. 1. Johannes Oporinus.

excepting the *Fabrica* and one or two others, they did not surpass those of other Basel printers in these respects. More highly prized was the correctness of his printing; for he himself read the proof for nearly all his publications, and read it with a scholar's eye. But even in this respect his work did not equal that of Robert Estienne at Paris or Sebastian Gryphius at Lyons. The secret of his success (in every regard but the financial) was rather the favorable position he enjoyed as a scholar whose reputation was already established before he set up as a printer; his many-sided connections in the learned world, which led even foreign scholars to entrust their work to him rather than to printers nearer home; and the assiduity with which he encouraged young scholars to write, assisted them in their work, kept himself informed of their progress, and knocked now at this door and now at that where he knew a completed manuscript lay in a desk. His home became a center of intensive scholarly activity and widespread literary correspondence, a

rendezvous for men of learning, and a repository of the best work of the time in all fields. It became a mark of distinction to have one's books published by Oporinus, until he was no longer able to keep abreast of the work that came his way, though he had more than fifty employees at one time, and though he farmed out a good deal to other printers at Basel and elsewhere. In 1553 he spoke of an *ingens lucubrationum cumulus* which lay waiting in his office. Hadrian Junius and others complained bitterly of the long delays in the printing of their manuscripts. There is no list of his publications which is even approximately complete, but seven hundred, or roughly twice the output of Froben, seems a conservative estimate. It is no wonder that his contemporaries were impressed by the "immense number" of them, even more than by their format and correctness; and that his tombstone speaks of them as *libri innumeri.*[22]

Editions and translations of the classics bulk largest among his productions, and on many of these he did the editorial work himself. First editions of most of them had already appeared, chiefly in Italy; but in Germany very few of the Greek authors had as yet been printed, and many were so hard to come by that Oporinus in his student days had been obliged to make manuscript copies of them for his own use. He printed more than fifty Greek texts, including the first edition of Books XVI-XX of Diodorus Siculus in 1539, and the first edition of Longinus in 1554. Perhaps the most influential edition of a classic which issued from his press was that of Epictetus, edited by his friend Hieronymus Wolfius, which Oporinus printed in 1563. Wolf's annotations restored the sense of the original Greek, and his Latin translations, remarkable for accuracy, conciseness and energy, gave to Epictetus his distinctive Latin physiognomy. This elaborate edition in three volumes octavo is one of the monuments of early modern classical scholarship, and one of the major productions of Oporinus's press. It gave a stimulus to the sixteenth and seventeenth century revival of Stoicism scarcely equaled even by the popular expositions of the Belgian humanist Joest Lips in 1583 and 1604. This or one of the later printings of Wolf's edition was used by the Elizabethan dramatist Chapman, through whose plays Stoicism entered the main stream of English literature.[21]

Next to the classics were the works of the church fathers and of the protestant reformers of his own day. His home, in fact, became a place of refuge, and reading for his press a means of livelihood, for protestant scholars in time of persecution or distress. When Sebastian Castellio, for instance, was driven by Calvin from Geneva in 1543, Oporinus took him in and made work for him, but left him time to edit Xenophon, re-edit his own *Dialogi Sacri,* and make his famous Latin translation of the Bible which Oporinus published in 1551. And when the short reign of Mary Tudor in England (1553-58) caused an exodus of protestants to the continent, several found their way to Basel, availed themselves of Opori-

nus's hopitality, and had their works printed by him. Among these was John Foxe, who served as corrector of the press for Oporinus from 1555 to 1559. In 1556 Oporinus published Foxe's *Christus Triumphans,* an apocalyptic drama after German models. When Ridley, Latimer and Cranmer were burned at the stake, Foxe drew up an expostulation and plea for toleration, addressed to the nobility of England under date of February 8, 1556, but first printed by Oporinus in 1557. In the latter year he also published for Foxe an ingenious series of 150 rules for aiding the memory. When Elizabeth succeeded Bloody Mary on the throne of England in 1558, the exiles spoke their joy through Foxe's pen and Oporinus's press, in a memorial entitled: *Germaniae ad Angliam, restituta Evangelii luce, Gratulatio.* It was at Basel, moreover, that Foxe composed his famous "Book of Martyrs" in its original Latin form, carrying his story of the persecution of reformers in England nearly to the end of Mary's reign; and this also was published by Oporinus in 1559. A second part, relating the history of persecution on the continent, was announced to follow; but Foxe abandoned it when he left for England in October, 1559, a month after his book came from the press. The continental continuation was then undertaken by Henry Pantaleone at Zurich, and published by Oporinus on March 20, 1563, the day on which Foxe's English version of the first part was published by John Day in London.[13, 24–26]

In January, 1559, Pope Paul IV issued the first great papal Index of Prohibited Books. To a long list of books specifically prohibited, including several that Oporinus had published, there was appended a list of "Printers from whose presses the works of various heretics have appeared," with the name Johannes Oporinus among them, and this sentence at the end: "Books, tracts and all works of any author, art or science, language and subject whatsoever, and in whatever type or construction, which shall hereafter be printed by the aforesaid and the like printers of the books of heretics, are to be regarded as prohibited in advance."[19]

But Oporinus had long since run afoul not merely of the Catholic but also of the Protestant censorship. As early as 1543, the year of the first edition of the *Fabrica,* he had made his first important contribution to the long struggle for freedom of the press. Sometime in 1542 Theodore Bibliander had come from Zurich to Basel to see to the printing of his Latin translation of the Koran. Oporinus undertook to publish it, but the censors of the press refused their *imprimatur.* The question was submitted to the Town Council, and the Council sought the advice of the clergy and the university faculty. These bodies were divided in their opinions. Some said that in view of the European expansion of Turkey, which had just completed its conquest of the greater part of Hungary, it was high time to learn the doctrines of its religion from their source and

combat them. Others, including even Boniface Amerbach, said the Council would bring universal infamy upon itself if it permitted the printing of so damnably heretical a book. The beer hall politicians were sure it would mean war with Turkey. The opposition won out, and Oporinus was jailed for a time. It took the intervention of the Zurich and Strasburg authorities, and of Luther himself, to induce the Council to reverse its decision and permit the printing, with the proviso that the book should not be sold in Basel. It came from the press of Oporinus in 1543, with a *praemonitio* by Melanchthon, an *apologia pro editione*, and a refutation of the heretical dogmas contained therein. Only thus hedged about could it be printed at all.[23]

Law and medicine and the various sciences, though less prominent than philology and theology, are substantially represented among Oporinus's publications. In medicine, there is of course the *Fabrica* itself, of which we have yet to speak. One name of equal eminence with that of Vesalius, namely Paracelsus, we look for in vain. Oporinus was in a position to be the foremost editor and publisher of his works; and it is the chief blot on his escutcheon that he failed to see and seize his opportunity. As if to compensate in part for this deficiency, he did, however, publish the major work of "the founder of modern psychiatry," Johann Weyer.[30]

Weyer, who was born in 1515 at Grave in Northern Brabant, had studied for about three years under Heinrich Cornelius Agrippa of Nettesheim, and absorbed the spirit of his *Occulta Philosophia* and *De vanitate scientiarum*, and his hostility to the witchcraft delusion. He was later a student at Paris in 1534, where he must have known Vesalius. After securing his degree at Orleans in 1537, and spending some years in travel and private practice, he became town physician of Arnhem in 1545. In 1550 he was appointed physician to Duke Wilhelm of Jülich, Cleves and Berg. As such he had leisure for study and began collecting materials for his *De praestigiis daemonum*, which was published by Oporinus in 1563, and went through eight editions in the next twenty years. Parcelsus had died in 1541, and a legend had already grown up about him, through which Weyer seems to have sensed that, like his own master Agrippa, Paracelsus had had a profound if erratic insight into the problems of medical psychology with which he was now grappling. There was no man living who had known Paracelsus more intimately than Oporinus, and Weyer applied to him for an account of the great master whom he had served in his youth. After much urging, Oporinus complied with the following letter, under date of November 26, 1555:

> As for Theophrastus Paracelsus, he is now long since dead, and I should not wish to contradict his ghost, as the saying goes. While he was alive, I learned to know him so well that I should not be eager to live with a man of his kind as I lived with him. For excepting his wonderful skill and success

in curing all sorts of diseases, I could find no piety or learning in him. And I often marvel to see so many things published with the claim that he wrote them and left them to posterity, which I should not even dream of ascribing to him.

Day and night during the nearly two years that I lived with him, he was so given to drink and revelry that it was hard to find him sober for an hour or two together. This was especially the case after his retreat from Basel to Alsace, where he was admired by the landed gentry and their wives as a second Aesculapius. When he was at his drunkest, he would come home to dictate some of his philosophy to me, and it would seem so beautifully put together that a sober man could not have improved upon it. I was charged with turning it into Latin, and some of the books so translated by me and by others have since been published.

So long as I lived with him, he never took off his clothes at night, which I attributed to his drunkenness. It was often toward midnight when he came home drunk to sleep. Fully clothed as he was, with the sword at his side which he claimed had been given him by a torturer or executioner, he would throw himself on his bed. Sometimes he would get up in the middle of the night, when he had scarcely slept, and stride about the room with drawn sword like one possessed, striking blow after blow at the floor and the walls, so that I sometimes feared he would cut off my head.

It would take me many days to tell you all that I endured with him. He had a coal stove with a fire always going in it, cooking up now his alkali, now his oleum sublimati, now the royal precipitate, now his arsenic or crocus martis, or his wonderful opodeldoc, and I don't know what other brew. Once he nearly suffocated me with his cooking, when he ordered me to contemplate the spirit of his alembic. I got my nose too close (for the glass cover had been set a little to one side), so that I inhaled the fume and stench through my mouth and nostrils, and was almost choked to death by the virulent vapors. I went into a trance, and only came to again when Paracelsus dashed cold water on me. Meanwhile he gave out that he could prophesy wonders and knew marvelous arcana and mysteries. Thus he put me in such fear of him that I did not dare to spy on his experiments or to disturb his apparatus.

He was so reckless with his money that he was often left without a penny so far as I knew and yet the next day he would show me his purse full of money again, so that I often wondered how he had come by so much.

Nearly every month he had a new suit of clothes made, and gave the old one to the first fellow he met; but it was usually so dirty that I never wanted it and wouldn't have worn it if he had given it to me.

In the treatment and cure of ulcers he did wonders when there seemed to be little hope. He did not prescribe any diet or regimen, but sat and drank freely with his patients day and night, so that he worked his cures (as he liked to say) on a full stomach. He purged all sorts of sickness with pills made up from powder of precipitate mixed with theriac or mithridate or cherry syrup. For extreme cases he had pills on the order of mouse turds which he called laudanum, and which he gave in large numbers as a last resort, letting down the holy anchor as they say. He was so proud of these

that he did not hesitate to say that he alone, simply by using some of these pills, could bring back the dead to life; and indeed when I was with him he sometimes gave proof of it by quickly restoring those who seemed to be dead.

But I never heard or saw him pray or show any interest in the services of the church or in the evangelical doctrine which was then beginning to be honored and practised among us, and to be earnestly and accurately expounded by our preachers. Indeed, he not only despised it, but threatened to put Luther and the Pope in their place when he got around to it, as he had already done with Galen and Hippocrates. No one, it seems, ancient or modern, who had ever written on the holy scriptures, had really got at the inner core, but only the outer husk. They threw light only on the semblance, not the reality.

And I don't know what other nonsense he proposed, which I should be ashamed to relate. This much I have told you in brief, and just as it came to my pen; for that is the way it pleased me to write to you. Some other time when I have the leisure I shall write you more.

He had no desire of women, and I believe he never had intercourse with any.

In the beginning he was quite sober. Until his twenty-fifth year he drank no wine; but after that he learned to drink wine so well that he would challenge whole tables full of farmers to a drinking bout, and always beat them by simply poking his finger down his throat now and then and acting like a pig.

There was little to Weyer's purpose in all this, except the experiment with hypnosis by the aid of chemistry. In the editions of his *De praestigiis daemonum* published by Oporinus, Weyer made no reference to the letter, or even to Paracelsus, though some unsympathetic pages on him and his followers were added in the French edition of 1579. Various friends of Weyer saw the letter, however, and copies of it began to circulate and to be quoted in accounts of both Paracelsus and Oporinus. One of the copies came into the hands of Pieter van Foreest, who incorporated a literal Dutch translation of it in a manuscript from which it was first printed in 1911.[7] It is from this, the only complete version of the letter now extant, that our translation has been made.

One of the most assiduous of Paracelsus collectors, editors and commentators, was Michael Schütz or Toxites. As we shall shortly see, Oporinus was in communication with him at least as early as 1555. Sometime toward the end of Oporinus's life they traveled down the Rhine together from Basel to Strasburg. At one of their stopping places they were walking in a meadow beside the Rhine and Oporinus was relating his experiences with Paracelsus. Among other things, he recalled with graphic detail how he had later brought himself back from death's door by taking some of the laudanum pills which Paracelsus had given him when they parted. He had not realized, he said, that his master was so learned a man

as Toxites and others had since shown him to be. There were two misfortunes which he regretted above all others. The first was that he had lost the manuscripts he had written out from the master's dictation, including all his formulas and other valuable items, by lending them to others who never returned them. The second was that he had written the letter about Paracelsus to Weyer. Weyer had got it from him by begging for it, and he would never have written it if he had known that it would get abroad as it had. Toxites, who tells the story, adds:

> It is well, however, that it was written, for there is more in it to the credit of Paracelsus than to his discredit, and even what is said to his discredit is to be understood in quite a different way from that in which Oporinus and others have interpreted it.[28]

It is an old saying that no man is a hero to his valet. Hegel added the footnote: "That is not because the hero is no hero, but because the valet is a valet." When Oporinus was famulus to Paracelsus, he had already the circumspectness of the scholar along with the piety of the protestant. Paracelsus flouted both, perhaps from exasperation, perhaps with a therapeutic intent beyond his famulus's ken. As for his heavy drinking at Colmar, it is sufficiently explained by the fact that, after the failure of his attempted reform of medicine at Basel, Paracelsus was in the depressive phase of something approaching a manic-depressive wave. It was a time, moreover, of bafflement and frustration for Oporinus. He could not place himself at the center of Paracelsus's vision. He recognized the clever physician, but could not fathom the sources of his power. They were still largely hidden from him when he wrote to Weyer nearly thirty years later. But we have the testimony of Toxites that at the end of his life Oporinus regretted his folly in allowing one of the opportunities of a printer's lifetime to slip through his fingers.

There was one other great opportunity, however, that he did not miss, but met with an adequacy that still commands admiration, bringing to bear upon it the full resources of the art of printing in the mid-sixteenth century. His folio editions of Vesalius's *Fabrica* in 1543 and 1555 are masterpieces of bookmaking by any test, and among books of science they take first rank. In both editions the type page, exclusive of marginal headings and notes, is approximately seven by twelve inches, and the full-page anatomical plates are somewhat larger. In the first edition there is already a departure from the rather heavy type, very solidly set, of the Basel books of the period, toward the delicacy of line which the French printers were introducing; and in the second edition this tendency is carried much further. The italic of the prefatory letter to Oporinus, and of the descriptions of the plates, is that of De Tournes and Rouillé at Lyons, and the type of the main text is Garamond roman. The roman font is much larger, and the italic rather smaller, than in the first edition.

(The roman font runs 57 lines to the page in the first edition, but only 49 in the second; the italic 52 in the first, and 55 in the second.) The wood engravings for the anatomical plates (and possibly for the initials as well in the case of the first edition) were made in Venice; and Oporinus is therefore responsible only for the fine impressions of them and for the skill with which the typography of the book was adjusted to them. Vesalius, moreover, had a share even in this; for he made it clear in advance that he wanted no sparing of pains or expense, and he himself went to Basel to superintend the printing. But the design of the second edition, which has on the whole been more highly prized than the first, was Oporinus's own. In nearly every case, the same woodblocks were used for the plates, but new ones were cut for the small initials and for one large one; and these, which must have been made to Oporinus's order, are markedly superior to those of the first edition, as Mr. Francis has shown.

The completed second edition of the *Fabrica* bears the date of August, 1555, but Vesalius's revision of the text was probably finished at Augsburg before October, 1551; and we know from Oporinus's catalogue of May, 1552, that five of the seven books had already been run off and were for sale. A letter from Oporinus to Conrad Hubert of Strasburg, dated May 4, 1555, gives us some insight into the difficulties under which the work was done, and helps to explain the long delay:

> Shortly before your letter came I had written to Michael Toxites to secure for me from the guardians of Dryander's children the moulds and tools for the large types in which he had had some things of Plutarch and others printed by Augustine Fries. Dryander himself had previously lent me the moulds to make the types for the second edition of Vesalius's Anatomy. But now some of the types are so worn from use that I must have more cast in order to finish the Anatomy which I started long ago and I cannot do so without the moulds and tools. I could easily get them again from Dryander if he were still living. But if the guardians will not let me have them for the asking, I shall gladly buy them at a fair price, just to be sure of their being sent to me promptly, by the next post despatched to me at my expense. I had rather lose two or three florins than be without them longer and go on day after day being prevented from finishing a work begun three years ago. I beg you, Conrad, to see that I get them, and that they reach me quickly.[20]

The Spanish protestant Francisco de Enzinas or Dryander, friend of Melanchthon and author of the Spanish translation of the New Testament (1543), had resided with Oporinus at Basel in 1546, while two of his Latin works were passing through the press. He had brought with him the Zurich printer Augustine Fries to print his Spanish works also at Oporinus's press. But the magistrates had refused to make any exception to the Basel ordinance which forbade printing in any language but Greek, Latin, Hebrew, and German. So Fries was set up in a shop at

Strasburg, where there were no forbidden languages, and printed for Dryander there under contract with Oporinus, using the latter's mark. The types in question appear to have been cast for the 1551 folio of Dryander's Spanish translation of Plutarch's Lives; and the moulds and tools became his property, though the types may have been designed by Oporinus.[15]

FIG. 2. Printer's mark in the *Fabrica* of 1543

Besides the two editions of the *Fabrica,* Oporinus published for Vesalius the two corresponding editions of the *Epitome,* the German translation of the *Epitome,* and the China-root epistle; and, as we have seen, he undoubtedly had a hand in the earlier printing of the Paraphrase of Rhasis and the epistle on blood-letting, which bear Winter's imprint. In 1542 Vesalius addresses him as his "very dear friend"; and in 1546 Vesalius's brother Francis speaks of the "great love" which Oporinus had for Vesalius, and of the great care with which he saw his works through the press; and he calls the *Fabrica* a badge of distinction for Oporinus as well as for the Vesalius family.

It was Vesalius who suggested the printer's mark—Arion on the dolphin—which Oporinus first used in the *Fabrica* of 1543. Until then he had had no mark, for the armed Minerva which appears on some of the books he published with Winter was not his, but Winter's. The sea of troubles by which Oporinus had long been beset, and on which the latest of many storms was the controversy over the Koran, reminded Vesalius of the following story in Herodotus:

In the time of Periander, tyrant of Corinth, a wonderful thing happened (so the Corinthians say, and the Lesbians agree): Arion of Methymna was carried to Taenarum on the back of a dolphin. Arion was a harp player second to none in his time, and the first man we know who made a dithyramb and called it by that name; and he recited it at Corinth. He had lived for many years at the court of Periander, when a longing came upon him to sail across to Italy and Sicily. Having made rich profits in those parts, he wanted to recross the seas to Corinth. He therefore hired a vessel, the crew of which were Corinthians, thinking that there were no people in whom he could more safely confide; and, going on board, he set sail from Tarentum. The sailors, however, when they reached the open sea, formed a plot to throw him overboard and seize upon his riches. Discovering their design, he fell on his knees, beseeching them to spare his life, and making them welcome to his money. But they refused; and required him either to kill himself outright, if he wished for a grave on the dry land, or without loss of time to leap overboard into the sea. In this strait Arion begged them, since such was their pleasure, to allow him to mount upon the quarter-deck, dressed in his full costume, and there to play and sing; and he promised that, as soon as his song was ended, he would destroy himself. Delighted at the prospect of hearing the very best harper in the world, they consented, and withdrew from the stern to the middle of the vessel: while Arion dressed himself in the full costume of his calling, took his harp, and standing on the quarter-deck, chanted the whole orthian strain. When he had finished, he flung himself, fully attired as he was, headlong into the sea. The Corinthians then sailed on to Corinth. As far Arion, a dolphin, they say, took him upon his back and carried him to Taenarum, where he went ashore, and thence proceeded to Corinth, in his musician's dress, and told all that had happened to him. Periander, however, disbelieved the story, and put Arion in ward, to prevent his leaving Corinth, while he watched anxiously for the return of the mariners. On their arrival he summoned them before him and asked them if they could give him any tidings of Arion. They returned for answer that he was alive and in good health in Italy, and that they had left him at Tarentum, where he was doing well. Thereupon Arion appeared before them, just as he was when he jumped from the vessel: the men, astonished and detected in falsehood, could no longer deny their guilt. Such is the account which the Corinthians and Lesbians give; and there is to this day at Taenarum, an offering of Arion's at the shrine, which is a small figure in bronze, representing a man seated upon a dolphin.

The dolphin had been familiar to Vesalius at Venice in the most famous of all printer's marks, that of the Aldine press. The first great publisher of the classics, Aldus Manutius, had used for his mark the anchor and dolphin, with the motto *"sudavit et alsit,"* from Horace's lines: "The athlete who is eager to reach the longed-for-goal has endured and done much in boyhood, *has borne heat and cold,* has abstained from women and wine." Oporinus bade fair to be the Aldus of a generation in which the center of classical scholarship had crossed the Alps from Venice to Basel. What more auspicious sign for him than Arion on the dolphin, with its promise of a happy issue out of all his afflictions?

Oporinus retained this mark to the end, with variations of size and design. At least seven variants have been noticed, and there are probably more. The singer has sometimes a harp, sometimes a violin, in his hands; sometimes he sits, sometimes he stands on the dolphin, and sometimes he is stepping from its back to the land. On most of the variants we find as motto the Sibyl's words to Aeneas before his descent into Hades: *invia virtuti nulla est via,* valor knows no obstacle; on some we find also the earlier promise of Helenus to Aeneas: *fata viam invenient,* the fates will find a way. These are doubtless Oporinus's own additions, and they give the mark a characteristic interpretation. The sea of troubles that buffeted him in his youth, oppressed him to the end; yet he never lost courage or hope. The reformation, which he and his father had embraced, had robbed painters of the larger part of their income, and made his father and sisters dependent on him. His apprenticeship to Paracelsus, which promised so much, had been a bitter disappointment. His first wife was a Xanthippe. Of her property, which would have sufficed to set him up in business, he got none; for on her death in 1533, her relatives contrived to appropriate the whole of it. Shortly afterwards he married Maria Ficin, a widow with three sons. She was an affectionate and good wife, but a bad manager, and the extravagance of her sons was a perpetual drain on his resources. It was probably the consequent necessity of looking out for larger earnings that led him into the printing partnership with Winter, Platter and Lasius. When that failed, he had already lost his professorship, and there was nothing for it but to remain in partnership with Winter. When Winter died deep in debt, Oporinus had to assume his debts in order to acquire his press and stock. As an independent printer, in spite of the repeated expansion of his establishment and its production, he fared but little better. His scholarship and accuracy brought him more work than he could do, but he had no head for sales and collections, or for avoiding expenses not necessary to the conduct of his business. He published books of solid merit, with too little regard for the market. He was uncommonly generous, not only to his father and sisters, but also to hard-pressed scholars like Castellio, and to unemployed printer's helpers. He was therefore always finding himself in need of money, and his annual journey to the Frankfurt book fair to market his wares and settle his accounts became a positive torture to him.

After more than thirty years with him, his second wife died of the plague in 1564. The same plague carried off the printer Johann Herwagen the younger. Oporinus married his widow, Elizabeth Holzach, who was rich in affection, good sense, and money. He was thus able to combine the Herwagen press with his own, and better times seemed in store for him. But his new good fortune in marriage and business was of short duration; for his wife died after four months, and his old troubles returned.

Finally, in 1566, he married Faustina, daughter of Boniface Amerbach and widow of Ulrich Iselin. Early in 1568 she bore him his first and only child, a son; and in order to render his old age free from care, she induced him to relinquish the printing business. But before he had time to settle into a life of well-earned leisure, he himself died on the 6th of July, 1568, at the age of sixty-one. He was buried in the cathedral at Basel, near Oecolampadius, Simon Grynaeus, and Sebastian Münster.

His nephew Theodor Zwinger relates that a few days before his death Oporinus had a dream.

> He saw descending over his breast the weights of a clock, of the kind that rouses from sleep by the sounding of a bell, and he heard a very sweet ringing from above, of such force that he awoke still snoring, and of such harmony that he was wonderfully delighted by the mere remembrance of it. When the harmony had died away, the weights were removed with the sound of a great rushing. Smiling, he said: "Who shall declare the mercies of the Lord, who to his innumerable gifts has wished to add this so gentle and paternal warning, like a colophon? Truly, O God, our life and our death are in thy hands. Have pity on us."[32]

So little was the prestige of his press disturbed by the vicissitudes of his fortune, that his successors took over his mark and for three decades proudly put on their publications the imprint: *ex officina Oporiniana.*

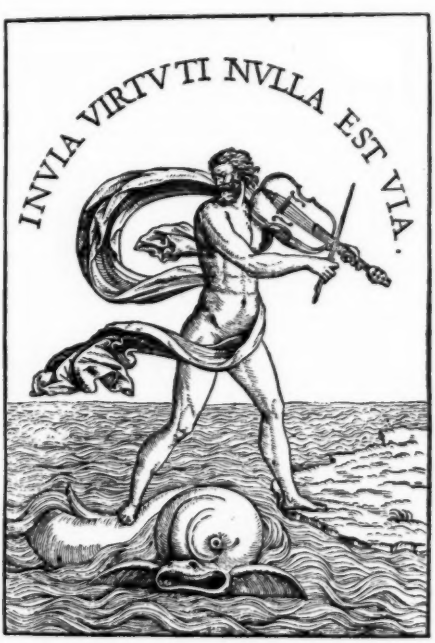

FIG. 3. Printer's mark in the *Fabrica* of 1555
(Reduced)

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(The chronological order of the items which contain sketches of the life and work of Oporinus is as follows: 4, 10, 1, 23, 22, 8.)

Association News

JOINT COMMITTEE ON PRIORITIES

At a meeting of the Council of National Library Associations on January 29, 1943, it was voted to recommend the participation of various library associations in a Joint Committee on Priorities. This committee has now been organized under the chairmanship of Mr. Harold L. Hamill of the Enoch Pratt Free Library, representing the American Library Association. Mr. Francis X. Dwyer of the Law Library of the Library of Congress is secretary of the working committee.

The first step in the work of the committee is to obtain an exact interpretation on the part of the Government as to the status of the various types of libraries under the War Production Board's CMP Reg. 5A. The following statement has just been issued in this regard:

4 June 1943

FOR INFORMATION OR PUBLICATION

Representatives of libraries interviewed Mr. Arthur G. Eaton, of the War Production Board, on June 4 in connection with CMP Regulation 5A and the ratings assigned to libraries.

Under new regulations effective immediately and soon to be published by the Government, public libraries are entitled to a rating of AA5. University and public school libraries are entitled to the AA-2X rating, as heretofore, and special libraries connected with public firms or corporations are entitled to the rating of the individual firm.

Mr. Eaton believes that these regulations will generously provide for the needs of libraries. In case any library has any trouble in securing supplies under these ratings, the library is instructed to ask for a special temporary rating for the material required, through their local war production board.

Most of the provisions of the earlier order are retained. As an example, any library supported by a government is entitled to an AA-2X rating for "repairs made necessary by reason of any breakdown of plumbing, heating, electrical wiring or equipment, or elevator service in any building or to provide against imminent breakdown of any such facilities by Government agencies only."

(signed) Harold L. Hamill
Chairman, A.L.A. Federal Relations Committee
Chairman, Joint Committee on Priorities of the Council of National Library Associations

Francis X. Dwyer
Secretary, Joint Committee on Priorities of the Council of National Library Associations
Ralph M. Dunbar
Chief, Library Service Division of the U. S. Office of Education

The majority of medical libraries will probably fall under the preferential rating AA-2X and a few under AA-1. However, there might be some differences in the interpretation of the regulations by the various states, so I am asking all medical libraries to get in touch with me if they are having difficulties in obtaining maintenance, repair and operating supplies of any kind. Also any difficulty in obtaining binding service should be reported.

EILEEN R. CUNNINGHAM
Member, Joint Committee on Priorities representing the Medical Library Association

MEDICAL LIBRARIES PARTICIPATE IN WORK OF COMMITTEE ON AID TO LIBRARIES IN WAR AREAS

MEDICAL libraries have responded most generously to the request for the donation of journals to be stored for future use in war stricken areas. To date the following libraries have sent in material as follows:

New York Academy of Medicine Library: 290 complete volumes, 35 nearly complete volumes, 675 single numbers.

University of Vermont, College of Medicine Library: 48 complete volumes, 4 nearly complete volumes, 1250 single numbers.

Abington Memorial Hospital Library: 5 complete volumes, 2 nearly complete volumes, 92 single numbers.

Albany Medical College Library: 12 complete volumes.

University of Oklahoma, School of Medicine Library: 202 complete volumes, 1091 single numbers.

James M. Jackson Memorial Hospital Library: 62 complete volumes, 680 single numbers.

Luzerne County Medical Society Library: 22 complete volumes, 365 single numbers.

Lois Grunow Memorial Library: 16 complete volumes.

Woman's Medical College of Pennsylvania Library: 133 complete volumes, 17 single numbers.

George F. Geisinger Memorial Hospital Library: 33 complete volumes, 49 single numbers.

New York Medical College, Flower and Fifth Avenue Hospital Library: 12 complete volumes, 102 single numbers.

Vanderbilt University School of Medicine Library: 26 complete volumes, 1122 single numbers.

Totals: Complete volumes 861, nearly complete volumes 41, single numbers 5443.

Other libraries may have sent material to depositories without notifying me. Therefore their donations could not be included here.

The Chairman of the Committee on Aid to Libraries in War Areas has repeatedly expressed his appreciation of our aid. Pressure of work has prevented my writing personally to those of you who have contributed so generously, and I wish to take this opportunity to thank you for your kind cooperation in this work.

EILEEN R. CUNNINGHAM, *Chairman*
Committee on Periodicals and
Serial Publications

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REGIONAL MEETING OF MEDICAL LIBRARIANS

Medical Librarians from New York, New Jersey, Pennsylvania, Delaware, Maryland, Connecticut, and Washington, D.C., held a regional meeting June 10th and 11th at Philadelphia in the meeting rooms of the College of Physicians. Dr. O. H. Perry Pepper, President of the College, welcomed the group, many of whom are members of our association. Drs. John F. Fulton and Henry Sigerist talked on *Vesalius, the Man and his Work*. Besides several technical papers the group enjoyed a presentation by Dr. Claude E. Heaton, *A Reader Looks at Librarians* and a paper by Dr. Joseph McFarland entitled *Our Old Shoes*.

* * *

The Joint Committee for the Study of Basic Problems in Technical Processes asks for the help of anyone interested in studying such problems. This committee, recently formed, has a membership representing the Association of American Library Schools, the A.L.A. Division of Cataloging and Classification, The Library of Congress, the Association of Research Libraries, and the Association of College and Reference Librarians. These members are:

Mr. Herman R. Henkle, Director, Department of Technical Processes, Library of Congress.
Mr. James G. Hodgson, Librarian, Colorado State College.
Mr. Willis Kerr, Librarian, Claremont Colleges, Claremont, California.
Miss Flora B. Ludington, Librarian, Mount Holyoke Library.
Miss M. Ruth MacDonald, Chief, Cataloging Department, Detroit Public Library.
Dr. Harriet D. MacPherson, Assistant Professor, Columbia University.
Dr. Robert A. Miller, Director of Libraries, Indiana University.
Dr. Andrew D. Osborn, Chief, Cataloging Department, Harvard College.
Mr. Mortimer Taube, In charge Book Selection and Acquisitions, Duke University.
Dr. Maurice E. Tauber, Chief, Catalog Department, University of Chicago.
Mr. Wyllis E. Wright, Head Cataloger, New York Public Library.
Dr. Ralph E. Ellsworth, Director of Libraries, University of Colorado.

It is hoped that a complete series of basic studies may be made with the object of improving library service to readers. If you would like to undertake or help with such a study, please write to

Mr. James G. Hodgson, Secretary
Joint Committee for the Study of Basic Problems in Technical Processes
Colorado State College of Agriculture and Mechanic Arts
Library
Fort Collins
Colorado

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MISS L. MARGUERIETE PRIME, Librarian of the AMERICAN COLLEGE OF SURGEONS (Chicago) and MISS MARION KAPPES, Librarian of the CHILDREN'S MEMORIAL HOSPITAL (Chicago) served as Chairman and Secretary respectively of the Medical Librarians Section at the annual meeting of the TRI-STATE HOSPITAL ASSEMBLY held in Chicago May 5th through May 7th. The following papers of interest to medical librarians were presented:

Darrach, Marjorie (Detroit Public Library)
Medical Bibliography in Wartime
Erickson, Lillian (St. Luke's Hospital, Chicago)
A Study of the Standard Nomenclature of Disease and Operations
Graham, Gladys Wilmot (St. Margaret Hospital, Hammond, Indiana)
The Hospital Library Serving Doctors, Nurses and Patients
James, Marion E. (Station Hospital Chicago Schools, Army Air Forces Technical Training Command)
Organization of a Station Hospital Library
Simiz, Y. (St. Luke's Hospital, Chicago)
Editorial Service in a Hospital Medical Library
Steinke, Eleanor F. (Winnebago County Medical Library, Rockford, Ill.)
Organization and Development of a Society Medical Library
Walker, Louise (Northwestern University Medical School, Chicago)
The Medical School Library in Wartime

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DR. LESTER H. LONERGAN, Associate Professor of Pharmacology and Therapeutics of the College of Medical Evangelists of Loma Linda, California announces that a gift recently received makes it possible for definite plans to be laid for a new library building. The present library, housed in the basement floor of Burden Hall, has long since outgrown the space there available and the need of suitable quarters has been urgent. A feature of the new building will be a special section devoted to the E. G. White manuscripts and personal library recently presented by J. A. Burden.

To aid the medical student, Dr. Lonergan adds, instruction in bibliography and literature research is now included. The response to this instruction has been most gratifying.

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CHINESE AND JAPANESE references on bacteriology, parasitology and epidemiology in the actual and prospective Pacific combat areas are urgently needed by the Preventive Medicine Division of the Army and Navy. Libraries or individuals in possession of any Oriental journal, pamphlet, report or reprint dealing with this subject matter are requested to communicate with the

American Documentation Institute, Oriental Science Literature Service, 1719 N St. N.W., Washington, D.C.

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The issue of the *Quarterly Cumulative Index Medicus* for January-June, 1943, will index various foreign periodicals. Articles indexed will be available on microfilm from the Medicofilm Service, Photoduplication Department, Army Medical Library, the Library of Congress, and the U. S. Department of Agriculture Library. The *Current List of Medical Literature,* issued by the Medical Library Association and the Friends of the Army Medical Library, will also index current issues of these periodicals.

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According to the *Diplomate* for May, 1943, the ARMY MEDICAL SCHOOL has established a distributing center for teaching material in parasitic and other tropical diseases. This is being furnished to medical schools upon request. In addition the OFFICE of the SURGEON GENERAL, of the ARMY, is arranging for the publication of information on the diseases of tropical countries and the preparation of maps showing the world distribution of tropical diseases. These materials will be distributed to the medical schools as teaching material.

* * *

DR. ARCHIBALD MALLOCH reports that the NEW YORK ACADEMY OF MEDICINE has been given 112 editions of the *Vicar of Wakefield* by Oliver Goldsmith. This valuable collection was presented by Mrs. Lester Ford Clay in memory of her father Dr. Linsly R. Williams, a former Director of the Academy. In honor of the gift an exhibition of the books was arranged which continued through May 15.

The late Lord Moynihan[1] referred to Dr. Goldsmith as "Best known and perhaps best beloved of all literary truants."

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The LIBRARY CLUB of CLEVELAND and VICINITY held a meeting at the CLEVELAND BRANCH, ARMY MEDICAL LIBRARY on May 7. Miss Florence M. Gifford, President, conducted a short business meeting. This was followed by a few informal remarks on the history of the Army Medical Library by Captain Thomas E. Keys, Officer in Charge. Max H. Fisch, Curator, spoke on VESALIUS and the FABRICA. Following the meeting the club members inspected the library and an exhibition of the PUBLICATIONS of VESALIUS as well as one of the MEDICAL PRINTERS of the RENAISSANCE. Miss Ada Floyd, Librarian of the CLEVELAND MEDICAL LIBRARY ASSOCIATION, displayed a few books from the NICOLAUS POL Collection of Medical Incunabula.

PERSONAL NEWS

MR. CHARLES FRANKENBERGER, for many years staunch pillar of the Medical Library Association, was honored on February 16, 1943, at a meet-

[1] Moynihan, Berkeley George Andrew: Truants, The story of some who deserted medicine, yet triumphed . . . Cambridge, At the University Press, 1936. p. 72.

ing of the Medical Society of the County of Kings and Academy of Medicine of Brooklyn. In recognition of twenty-five years of service as Librarian, Mr. Frankenberger was presented with a beautiful watch, the gift of the Society. Presentation remarks were made by Dr. Edwin P. Maynard, Jr., Associate Directing Librarian and Curator.

Since September 1, 1917, Mr. Frankenberger has served as Librarian of the Kings County Medical Society. Before his appointment he had been associated with Mr. C. Perry Fisher, Librarian of the College of Physicians of Philadelphia. After that Mr. Frankenberger was in charge of the Jefferson Medical College Library at Philadelphia.

* * *

MRS. EILEEN R. CUNNINGHAM will leave August 1 for South America. Mrs. Cunningham will spend a month in Lima, Peru, where she will make a survey of medical library facilities there and, in particular, the needs of the medical library of the San Marco University Medical School in Lima.

Mrs. Cunningham will also make stops in Bogota, Colombia, and in Mexico City in order to become familiar with medical library facilities in these cities.

Mrs. Cunningham has been granted a leave of absence of two months by Vanderbilt University in order to make this trip, which will be carried out under the auspices of the Rockefeller Foundation.

* * *

MISS MARGUERITE E. CAMPBELL, Librarian of the CHICAGO MEDICAL SCHOOL writes that she has been assisting in the preparation of "An All-Inclusive Dictionary Amalgamation of Abbreviations." This is a project of the SPECIAL LIBRARIES ASSOCIATION, Biological-Science Group, Miss Marion Kappes, Chairman.

* * *

COLONEL HAROLD W. JONES gave an address to the undergraduates of the Medical, Dental and Pharmacy Schools of the University of Illinois in Chicago, May 5, 1943. Previous to the lecture about fifty guests assembled for luncheon. The guests included Dean Davis of the Medical School, Mr. Tom Jones of the Art Department, and many members of the Medical Library Association. Miss Wilma Troxel presided. Colonel Jones talked on The Army Medical Library, its past history and its future obligations.

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MISS FRIDA PLIEFKE, Librarian of the HENNEPIN COUNTY MEDICAL SOCIETY, Minneapolis, delivered seven lectures this spring to library students at the University of Minnesota.

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DR. HENRY E. SIGERIST writes that the November issue of the *Bulletin of the History of Medicine* will be entirely devoted to Vesalius. Celebrations will be held at New Haven and Baltimore in October and November, and the papers that will be presented on these occasions will be included.

Mr. A. D. Ballou, Publisher of *Surgery, Gynecology, and Obstetrics* with offices at 54 East Erie St., Chicago, Illinois, is anxious to obtain a number of copies of the March, 1943 issue. Those having duplicates of this number of *Surgery, Gynecology, and Obstetrics* are urged to write to Mr. Ballou.

* * *

DR. CHAUNCEY D. LEAKE now Dean of the Medical School, University of Texas (Galveston) and formerly Professor of Pharmacology and Librarian, University of California Medical School (San Francisco) writes that Dr. Mayo H. Soley is Acting Librarian of the University of California Medical Center Library and that Mrs. Francis Tomlinson, Librarian of the Crummer Room has arranged a Vesalian exhibit in honor of the quatercentenary of the publication of the *Fabrica.* Dr. Leake adds that a "Founders' Room" has been established at the University of Texas School of Medicine to house the rare book collection together with supplementary volumes relating to the history of medicine.

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MR. W. D. POSTELL, Librarian, Louisiana State University, School of Medicine (New Orleans), attended the meeting at Birmingham, May 18-20 of the Southern Regional Committee of the Social Science Research Council, as a member of the committee for the study of health conditions in the South. Mr. Postell served on this committee in the capacity of a Southern Medical Historian.

Recently the library of the Department of Nursing Education of the Louisiana State University, School of Medicine, became affiliated with the library of the School of Medicine and will function henceforth as a branch of the latter library.

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MRS. FLORENCE A. COOKSLEY has resigned as Associate Editor of the Journal of the International College of Surgeons to accept the position, Chief Record Librarian at Gallinger Municipal Hospital, Washington, D.C.

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Correction. The name of MISS RUTH D. MONK, Librarian of the Faculty of Medicine of the University of Manitoba was misspelled in the April issue of the Bulletin (pages 192 and 197).

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Foreign News

IT IS WITH deep regret that we report the destruction of a famous library by fire. On May 10 the NATIONAL LIBRARY of PERU was razed by a disastrous fire. Located at Lima, this world renowned library contained more than 100,000 rare volumes and a collection of 40,000 manuscripts. All were lost. Included were many documents concerning the Spanish conquest, the wars for independence, and the first years of the Republic. They had been collected by Ricardo Palma and Manuel Gonzalez Prada, directors of the library.

* * *

The following notice is reprinted from the BRITISH MEDICAL JOURNAL for May 1, 1943: Textbooks for Medical Students in Malta.

MR. DAVID PYKE, on behalf of the British Medical Students' Association (B. M. A. House, Tavistock Square, W. C. 1), writes: May I appeal to any of your readers who possess unwanted medical textbooks? We have received a letter from the Students' Representative Council of the University of Malta saying that they are desperately short of essential books, mentioning: *Gray's Anatomy, Bigger's Bacteriology, Cushny's Pharmacology, Clark's Applied Pharmacology, Price's Medicine* or *Osler's Medicine, Green's Pathology,* and *Kerr's Obstetrics.* Most of the students at present have no books; the lucky ones have them dating from Lister's time. I believe that before the war students from Malta completed their training abroad, and that the opening of a clinical teaching department, combined with great shortage of shipping space, has produced the present difficult situation. We have been assured of every possible help by the Colonial Office, and therefore anyone who is kind enough to send medical textbooks to us may feel certain that every endeavour will be made to see that they reach our brave friends in Malta.

Obituaries

DR. SAMUEL WALDRON LAMBERT

IT IS FITTING in this issue of the Bulletin commemorating the quatercentenary of the FABRICA of VESALIUS to honor the memory of Dr. Samuel Waldron Lambert who died February 9, 1942, at the age of 82. Dr. Lambert was an honorary member of the Medical Library Association and will always be remembered for the efforts he with the aid of Dr. Archibald Malloch put forth in bringing out the superb *Andreae Vesalii Icones Anatomicae*. This was published jointly by the New York Academy of Medicine and the Library of the University of Munich in 1934. It contains, with the exception of the initials, the illustrations in all of Vesalius's publications, printed in most cases from the original blocks in the possession of the Library at Munich.

Dr. Lambert received his Bachelor of Arts degree in 1880, Bachelor of Philosophy degree in 1882, Master of Arts degree in 1905, all from Yale University.

He was graduated in medicine from the College of Physicians and Surgeons (Columbia) in 1885, and in 1921 received an honorary Doctor of Science degree from Columbia University.

A great book lover, Dr. Lambert made a collection of many fine volumes. He was particularly interested in the Library of the New York Academy of Medicine and helped in the assembling of the collections for the Rare Book Room. He was an ardent member of the Charaka and Grolier Clubs.

Dr. Lambert was co-author with George M. Goodwin of *Medical Leaders from Hippocrates to Osler* (Indianapolis, Bobbs-Merrill Company, 1929) and author of *When Mr. Pickwick Went Fishing* (New York, Brick Row Book Shop, Inc., 1924). He also contributed many articles to the periodical literature.

DR. CHARLES BYRON WARD

On March 27, 1943, the King County Medical Library, Seattle, Washington, lost one of its staunchest and most useful members, Dr. Charles Byron Ward.

Dr. Ward was born near Strathroy, Ontario. He was graduated by Toronto University Medical School in 1908. Following graduation he studied in London and Edinburgh.

For several years Dr. Ward practiced medicine and surgery in Spokane, Washington, giving more and more of his attention to Roentgen ray therapy. Because of his success and skill in this therapeutic procedure, he made it his specialty.

In 1932 he was induced to move to Seattle, Washington, to take charge of the newly formed Tumor Institute at the Swedish Hospital there. He resigned in 1936 to head the Roentgen ray therapy department of Providence Hospital, and to devote some time to private practice.

One of the major interests in Dr. Ward's life was medical libraries. He was a supporting member of the Medical Library Association. While he practiced in Spokane, he organized the Spokane County Medical Library. He raised all of the funds and completely supervised the plans, equipment and personnel.

After moving to Seattle, he helped to reorganize the King County Medical Library. From a poorly financed, struggling-for-existence library, it soon expanded into splendid quarters, modern equipment in all details, and acquired a medical librarian, Miss Ruth Harlamert. Due to his planning and foresight this library is now well financed and on solid ground.

Such library friends are all too rare. We enjoy their fruits long after they themselves pass on. They teach us that we of this generation have a real debt to those who are just behind us. Let us try to pay it now.

A. H. PEACOCK, M.D.

DR. JAMES EWING

Dr. Ewing, famous pathologist in the field of cancer research and Medical Director of Memorial Hospital for the Treatment of Cancer and Allied Diseases (New York City), died on May 16, 1943. Dr. Ewing was born in Pittsburgh, December 25, 1866. He attended Amherst College, receiving his Bachelor of Arts degree in 1888 and his Master of Arts degree in 1891. That same year Dr. Ewing received his Doctor of Medicine degree from the College of Physicians and Surgeons of New York (Columbia University). He was the recipient of honorary degrees from Amherst College, University of Pittsburgh, University of Rochester, Union University, Kenyon College, and Western Reserve University.

Medical librarians will always cherish his textbook, *Neoplastic Diseases* (Ed. 4 Philadelphia, Saunders, 1940), the classic in its field and a book that finds constant use in every medical library. Dr. Ewing

was also the author of *Clinical Pathology of the Blood* (Ed. 2. Philadelphia, Lea, 1903), and of many contributions to periodical literature.

DR. ROBERT A. KILDUFFE

Major Robert A. Kilduffe died on April 5, 1943, at the age of 53. He was Chief of Laboratory Service, Ashford General Hospital, White Sulphur Springs, West Virginia. In civilian life Dr. Kilduffe was Director of Laboratories, Atlantic City Hospital and City Bacteriologist of Atlantic City. Dr. Kilduffe was the author of several well known books and articles including *The Blood Bank and the Therapeutics of Transfusion* (with Michael DeBakey). St. Louis, C. V. Mosby Co., 1942.

Queries and Answers

A DECADE OF DOCTORS. The April issue of the Bulletin published ten queries concerning physicians of fiction and fact, from ancient and modern literature and life. How many answers could you supply? This set of queries with answers as listed below was compiled by Mr. Frank Place, Reference Librarian, New York Academy of Medicine.

Queries

1. The doctor whose "Memoirs" form the first of a series of historical romances.
2. The doctor whose contribution saved a ship from destruction.
3. The doctor, not a pediatrician, who seems to have spent his life entertaining children in travel, with animals, etc.
4. The doctor who took part in an expedition in search of buried treasure.
5. The doctor whose aphorisms, in the form of a declaration of principles, are subscribed to by medical students.
6. The doctor who acted as stooge to the drug-taking detective.
7. The doctor around whom centered the life of the village of Chester.
8. The doctor who, by his own account, lost his leg in ten different ways.
9. The doctor whose book of travels has long been a classic.
10. The doctor whose account of a voyage of some thousands of miles in an open boat, is the sequel to a well known sea tragedy.

Answers

1. Joseph Balsamo in *Memoirs of a Physician* by Alexander Dumas.
2. Oliver Wendell Holmes, with *Old Ironsides,* saving *The Constitution* from being broken up.
3. Dr. Doolittle, in books by Hugh Lofting.
4. Dr. Livesey, in *Treasure Island,* by Robert Louis Stevenson.
5. Hippocrates, Father of Medicine, in the "Hippocratic Oath."
6. Dr. John Watson in the Sherlock Holmes stories by Arthur Conan Doyle.
7. Dr. Lavender, in *Old Chester Tales* and others, by Margaret Deland.
8. Dr. Dogbody, in *Doctor Dogbody's Leg,* by James Norman Hall.
9. Lemuel Gulliver, ship's doctor, in *Gulliver's Travels* by Jonathan Swift.
10. Dr. Ledward, the reputed author of *Men Against the Sea* by Charles Nordhoff and James Norman Hall.

Exhibits

EXHIBITION OF BOOKS ON THE HISTORY OF ANATOMICAL ILLUSTRATION HELD IN THE ARCHIBALD CHURCH LIBRARY OF NORTHWESTERN UNIVERSITY MEDICAL SCHOOL

By Louise Walker

Under the accelerated program, study of the history of medicine is apt to suffer, although the inspiration of the high ideals and accomplishments it presents are as important as ever. The Archibald Church Library is attempting to fill the gap with well annotated, chronologically arranged exhibits on a variety of subjects. Exhibits are changed each month—each week in connection with some courses.

Since the library staff is also busier than ever, we have had to depend a good deal on previously prepared outlines. The exhibit described below was based directly on the printed program of an exhibit in the McGill University Museum of Human Anatomy.[1] Descriptive notes were borrowed from that catalogue. Engravings, biographies, etc. were used in addition. After the books had been on display for awhile, some of them were removed to make room for an expanded Vesaliana[2] section.

Early Woodcuts

Ketham, Joannes de

1. The fasciculus medicinae. . . . Facsimile of the first (Venetian) edition of 1491. . . . Milan, R. Lier & Co., 1924.

Mondino da Luzzi

2. Anatomia Mundini. . . . Marpurgi, C. Engeholphi [1541].

Early 16th Century

Leonardo da Vinci

3. Quaderni d'anatomia. III. Organi della generazione. Embrione. Christiania, J. Dybwad, 1913.

[1] McGill University. Museum of human anatomy. Exhibition of the history of anatomical illustration. Montreal, Renouf pub. co., 1930.

[2] Feyfer (F. M. G.) Die Schriften des Andreas Vesalius. Eine Bibliographie mit einer iconographischen Tafel und 8 Abbildungen. Janus, 1914, 19:435-507 was used as the basic list in checking the Library's holdings. A selected list was published in Anson (B. J.) The Fabrica of Andreas Vesalius and imitative works. Q. Bull. Northwestern Univ. M. School, 1942, 16:221-231.

Dürer, Albrecht

4. Della simmetria dei corpi humani. . . . Venetia, presso D. Nicolini, 1591.

Canano, Giovanni Battista.

5. . . . Musculorum humani corporis picturata dissectio (Ferrara 1541?) Facsimile edition. . . . Florence, R. Lier & Co., 1925.

The Vesalian Figures[3]

Vesalius, Andreas

6. De humani corporis fabrica libri septem. Basileae, per J. Oporinum, [1555].
7. De humani corporis fabrica libri septem. . . . Venetiis, Apud Franciscum Franciscium Senensem & Ioannem Griegher Germanum, 1568.

Paré, Ambroise

8. Opera. . . . Parisiis, apud Iacobum Dupuys, 1582.
9. The workes. . . . London, T. Cotes & R. Young, 1634.

Valverde, Juan de

10. Anatomia del corpo humano. . . . Roma, Per Ant. Salamanca et Antonio Lafrerij, 1560.

Bartisch, Georg

11. Ophthalmodouleia, das ist, Augendienst. . . . [Dresden, Matthes Stöckel, 1583].

Eustachio, Bartolomeo

12. Tabulae anatomicae. . . . Romae, sumpt. L. et T. Pagliarini, 1728.

Casserius, Julius & Bucretius, Daniel

13. Anatomische Tafeln. . . . Franckfurt am Mayn, G. H. Oehrling, 1683.

Remmelin, Johann Conradus

14. Catoptrum microcosmicum. . . . Augustae Vindelicorum, typ. D. Francki, 1619.

17th Century

Asellius, Gaspar

15. De lactibus, sive lacteis venis. . . . Lugd. Bat., J. Maire, 1640.

Malpighi, Marcello

16. Opera omnia. . . . Londini, R. Scott & G. Wells, 1686.

[3] Those in the display in its first state are listed here. The complete list of the Library's holdings is appended.

Willis, Thomas
17. Cerebri anatome. . . . Amstelodami, G. Schagen, 1666.

Browne, John
18. Myographia nova. . . . Londini, Excudebat Joannes Redmayne, 1684.

18th and 19th Centuries (to 1869)

Cheselden, William
19. Osteographia; or, the anatomy of the bones. London, 1733.

Gautier d'Agoty, Jacques
20. Myologie complette. . . . Paris, Gautier, Quillau pere et fils, Lamesle, 1746.
21. Anatomie de la tête. . . . Paris, Gautier, Duverney, Quillau, 1748. The above two works bound together.

Haller, Albrecht von
22. Icones anatomicae. . . . Gottingae, A. Vandenhoeck, 1743-1756.

Albinus, Bernhard Siegfried
23. Academicarum annotationum. Liber 1-8. Leidae, Apud J. & H. Verbeek, 1754-1768. 8 v. in 2.

Hunter, William
24. Anatomia uteri humani gravidi tabulis illustrata. . . . Birmingham, Printed by J. Baskerville; London, S. Baker & G. Leigh [etc.], 1774.

Camper, Petrus
25. Planches pour les oeuvres de P. Camper. . . . Paris, T. Dabo, 1803. An atlas of plates accompanying the collected works (3 v., Paris, 1803).

Bell, Sir Charles
26. Engravings of the arteries. . . . London, T. N. Longman & O. Rees, 1801.

Cooper, Sir Astley Paston
27. The anatomy and surgical treatment of abdominal hernia. . . . 2d ed. . . . London, Rees, Orme, Brown & Green, 1827.

Quain, Jones & Wilson, William James Erasmus
28. A series of anatomical plates. . . . Phila., Carey and Hart, 1845.

Sibson, Francis
29. Medical anatomy. . . . London, J. Churchill & Sons, 1869.

List of Vesalian Volumes in the Archibald Church Library (used in expanding the above exhibit)

Works by Vesalius

1. Consilium Vesalii medici imperatoris excellentissimi. [to Forestus] *in* Forestus Alcmarianus, Petrus. Observationum et curationum medicinalium ac chirurgicarum. . . . Rothomagi, Ioan. & Davidis Berthelin 1653. v. 1, lib. 10, obs. 97, p. 551-552.
2. De humani corporis fabrica libri septem. Basileae, Ioannem Oporinum, [1555].
3. De humani corporis fabrica libri septem. . . . Venetiis, Apud Franciscum Franciscium Senensem, & Ioannem Griegher Germanum, 1568.
4. Des Andreas Vesalius sechs anatomische Tafeln vom Jahre 1538. . . . Leipzig, J. A. Barth, 1920.
5. Notomie de Titiano. . . . [Engraved by Domenico Bonavera after Vesalius' Tabulae, attributed to Titian] [Bologna, 1670?].
6. . . . Opera omnia anatomica et chirurgica. . . . Lugduni Batavorum, Joannem du Vivie et Joan. & Herm. Verbeek, 1725. 2 v.
7. Tabulae ossium humanorum. . . . Lugduni Batavorum, S. et J. Luchtmans, P. Van der Eyk et D. Vijgh, 1782.

Compilations from Vesalius

8. Leveling, Heinrich Palmaz. . . . Anatomische Erklärung der Original-Figuren von Andreas Vesal. . . . Ingolstadt, Anton Attenkhouer, 1783.
9. Valverde, Juan de. Anatomia del corpo humano composta per M. Giouan Valverde di Hamusco. . . . Roma, Ant. Salamanca, et Antonio Lafrerij, 1560.
10. Valverde, Juan de. Vivae imagines partium corporis humani aereis formis expressae. Antverpiae, ex officina Christophori Plantini, 1572.

Books using Vesalian Plates or Text

11. Alberti, Salomon. Historia plerarumque partium humani corporis. . . . Vitaebergae, [Zacharias Lehman, 1583].
12. Bartholin, Caspar. Institutiones anatomicae. . . . Lugd. Batavorum, Franciscum Hackium, 1641.
13. Bartholin, Thomas. Anatome ex omnium veterum recentiorumque observationibus. Imprimis institutionibus b. m. parentis Caspari Bartholini, ad circulationem Harvejanam et vasa lymphatica. Quartum renovata. . . . Lugduni Batavorum, Ex officina Hackiana, 1673.
14. ——— Anatome quartum renovata. . . . Lugduni, Marci & Joan. Henrici Huguetan, 1684.
15. ——— Anatomia. . . . Hagae-Comitis, Ex typographia Adriani Vlacq, 1663.
16. ——— Bartholinus anatomy. . . . London, Printed by John Streater, 1668.
17. ——— Neu-verbesserte künstliche Zerlegung des menschlichen Leibes. . . . Nürnberg, In Verlegung Johann Hofmannss Buch- und Kunsthändlers, 1677.

18. Bartisch, Georg. Ophthalmodouleia, das ist, Augendienst. . . . [Dresden, Matthes Stöckel, 1583].
19. Bauhinus, Caspar. De corporis humani fabrica. . . . Basileae, Sebastianum Henricpetri, [1590].
20. Beverovicius, Johann. Heel-konste ofte derde deel van de geneeskonste, om de uytwendige gebreken te heelen. Dordrecht, Hendrick van Esch, 1645.
21. Cabrolius, Bartholomaeus. Ontleeding des menschelycken Lichaems. . . . t'Amsterdam, by Cornelis van Breugel, Voor Hendrick Laurentsz, 1653.
22. Casserius Placentius, Julius and Bucretius, Daniel. Anatomische Tafeln. . . . Franckfurt am Mayn, Georg Heinrich Oehrling, 1683.
23. Columbus, Matthaeus Realdus. De re anatomica libri XV. Venetiis, Ex typographia Nicolai Beuilacquae, 1559.
24. Crooke, Helkiah. Mikrokosmographia. A description of the body of man. . . . London, Printed by William Jaggard, 1615.
25. *Ibid.* [London], Printed by W. Jaggard, 1618.
26. *Ibid.* London, Printed by Thomas and Richard Cotes, 1631.
27. Diaz, Francisco. Tratado nuevamente impresso, de todas las enfermedades de los riñones, vexiga, y carnosidades de la verga, y urina, y de su cura. . . . Madrid, Carlos Sanches, 1643.
28. Disdier, François-Michel. Exposition exacte ou tableaux anatomiques en taillesdouces des différentes parties du corps humain. . . . Paris, Crepy, 1758.
29. Diemerbroeck, Ijsbrand van. Opera omnia anatomica et medica. . . . Ultrajecti, Apud Meinardum à Dreunen, & Guilielmum à Walcheren, 1685.
30. Eustachio, Bartolomeo. Tabulae anatomicae. . . . Editio Roman altera. Romae, Sumptibus Laurentii & Thomae Pagliarini, 1728.
31. *Ibid.* Venetiis, Bartholomæi Locatelli, 1769.
32. Fuchs, Leonhard. De humani corporis fabrica. . . . Epitomes pars prima, duos. . . . Lugduni, Apud Ioannem Frellonium, 1551.
33. Laurentius, Andreas. Historia anatomica. . . . Lugduni, Sumpt. Laurentij Anisson & Soc., 1650.
34. *Ibid.* Francofurti, Iohnae Rhodii, 1602.
35. Mercurio, Scipione. La commare oriccoglitrice. . . . Venetia, Apresso Gio. Bat. Ciotti, 1621.
36. Mondino da Luzzi. Anatomia Mundini. . . . Marpurgi, In officina Christiani Egenolphi [1541].
37. Paaw, Petrus. A. Cornelii Celsi De re medica liber octavus. Lugduni Batavorum, Apud Iodocum à Colster, 1616.
38. ——— Succenturiatus anatomicus. . . . Lugduni Batavorum, Apud Iodocum à Colster, 1616.
39. Paré, Ambroise. La méthode curative des playes et fractures de la teste humaine. . . . Paris, De l'Imprimerie de Iehan le Royer, 1561.

40-47. ——— [Works].

All editions have good copies of Vesalian plates. The Archibald Church Library has the following editions:

French: Lyon, Claude Prost, 1641; Lyon, Pierre Rigaud, 1652; Lyon, Jean Gregoire, 1664; Paris, J. B. Vaillière, 1840-41 (3 v.).
Latin: Parisiis, Iacobum Dupuys, 1582.
English: London, Th. Cotes & R. Young, 1634; London, Richard Cotes and Willi. Du-gard, 1649.
Dutch: Vlissingen, Iacob Pick, 1655.

48. Plater, Felix. De corporis humani structura et usu libri III. . . . Basileae, Apud Ludovicum König, 1603.
49. Remmelin, Johann Cunradus. Catoptrum microcosmicum. . . . Augustae Vindelicorum, typ. D. Francki, 1619.
50. Rueff, Jacobus. De conceptu et generatione hominis. . . . Francoforti ad Moenum, 1580.
51. Tagault, Johannes. De chirurgica institutione libri quinque. . . . Parisiis, Apud Christianum Wechelum, 1543.
52. Vidius, Vidus. Opera omnia, sive ars medicinalis. . . . Tomus tertius. In quo continentur de ratione victus lib. VIII. De medicamentis lib. VIII. De chirurgia lib. IV. De anatome lib. VII. Francofurti ad Moenum, Typis & sumptibus Wechelianorum, apud Danielem & Davidem Aubrios & Clementem Schleichium, 1626.

CLEVELAND VESALIUS EXHIBIT

In commemoration of the quatercentenary of the founding of modern anatomy by Andreas Vesalius, an exhibit has been arranged in the reading room of the Cleveland Medical Library Association. This exhibit was prepared by the staff of the Cleveland Branch of the Army Medical Library, and the books are largely from its collection; but they include two important items from the collection of the Cleveland Medical Library Association, and one from the Biology Library of Western Reserve University. These are, respectively, the copy of the second edition of the *Fabrica* (1555) presented to the Association in 1893 by Dr. Howard A. Kelly (who died in January of the present year); a copy of the first edition of Geminus's compendium plagiarized from Vesalius in 1545; and the university copy of the first edition of the *Fabrica* (1543).

All of Vesalius's works are represented in the exhibit, though not in every case by first editions. In the following list, the date of the first edition is given, and when this is not the edition included in the exhibit, the date of the edition included is given in parentheses.

1. Paraphrase of book nine of the *Almansor* of Rhasis. Louvain, 1537. (Basel, 1537.)
2. Revision of the anatomy textbook of his former teacher, John Winter of Andernach. Venice, 1538. (1585.)
3. Anatomical Tables. Venice, 1538. (Maxwell facsimile, 1874.)
4. Epistle on blood-letting in pleurisy. Basel, 1539.
5. Contributions to the Juntine edition of Galen in Latin translation. Venice, 1541. (Vesalius revised the translations of Galen's works on the dissection of nerves, veins, and arteries, and on anatomical procedure.)

6. First edition of the *Fabrica.* Basel, 1543. (Two copies.)
7. First edition of the *Epitome.* Basel, 1543.
8. German version of the *Epitome.* Basel, 1543.
9. *China Root Epistle.* Basel, 1546.
10. Second edition of the *Fabrica.* Basel, 1555. (Two copies.)
11. *Examination of Fallopio's Anatomical Observations.* Venice, 1564.

Besides these, there are two copies of the Geminus compendium, London, 1545; the first edition of Fallopio's *Observations,* Venice, 1561; the reprint (1790) of Servetus' *Christianismi restitutio* (1553), for which he was burned at the stake in Calvin's Geneva, and which contains the earliest account of the pulmonary circulation, perhaps arrived at when he was Vesalius's fellow-prosector at Paris about 1536.

Finally, there is a copy of *Andreae Vesalii Icones Anatomicae,* published jointly in 1934 by the New York Academy of Medicine and the Library of the University of Munich, which contains the illustrations in all of Vesalius's publications printed in most cases from the original blocks in the possession of the Library at Munich.

Reviews and Book Notes

BUTLER, PIERCE, Ed. *The Reference Function of the Library; Papers Presented before the Library Institute at the University of Chicago, June 29 to July 10, 1942.* With a Foreword by Louis R. Wilson. 366 pp. Chicago, University of Chicago Press, c1943. $3.00.

The Institute's choice of the reference function as the subject of its seventh meeting was made as the result of several considerations: the great growth of American library resources in the last twenty years and the increase in the number and efficiency of the tools for their use; but more than these, perhaps, is the feeling among reference librarians that cataloguing methods and training courses in reference work both need a little critical attention, and that there is a real need for a volume bringing together the theory and the practice of reference librarianship.

The Institute's program was planned largely by Dr. Pierce Butler, whose own "Survey of the Reference Field" opened the Institute with a challenge to create a theory and literature of reference librarianship that would raise it to a higher professional level on which to meet scholars as equals.

The papers that follow Dr. Butler's are all written by leaders in their fields; they discuss the reference function in its various settings: the large public library, the small and medium-sized public library; the school library; the college library, the university and research library; the special collections in art, music, maps, social sciences, science and technology, and the rare book room. Administration, personnel and training, and supplementary reference materials are discussed in other papers. Two representatives from the world of scholars point out the duty of reference librarians towards scholarship. Professor Albert Howard Carter of the University of Chicago wants the reference librarian to index all material the humanist may want to use, in a way to make it quickly and completely available to him, and to collect all records of the community, as well as learn to describe the physical make-up of books to the satisfaction of the scholar. Professor John Webster Spargo of Northwestern demands that "specialized training in an intellectual discipline be included" in reference training, thereafter reference librarians concentrating on preparing and publishing aids for scholars. Brilliantly he marshals his arguments and as gracefully admits the difficulties of reaching such a goal. The final paper points out the reference librarian's opportunity and responsibility in a world at war to help in winning the peace.

The medical librarian will find much to interest him in this collection, much that is helpful in solving his own problems.

Ernest S. Griffith, Director, Legislative Reference Service, Library of Con-

gress, in his paper, "Special Reference Problems in the Social Sciences," claims that the reference needs of our readers are determined by the impact on their lives of major changes in the evolution of society: the rise of the expert, the articulateness of the masses and the growing emphasis on human relations and welfare. Emphasis on the individual is now changed to his social significance. Mr. Griffith asks if reference librarians are ready to play their role in the coming education towards a real democracy.

Kanardy L. Taylor, Chief of Public Service, John Crerar Library, discusses problems in science and technology, one of which is the tardiness and the absence of reviews of scientific books in English and the even greater delay in the foreign field. Waiting for evaluations often means that the useful life of the book is shortened. Mr. Taylor summarizes suggestions for improved methods of indexing and abstracting on a national scale or even an international one. The present methods produce overlapping services, often varying with the viewpoints of the intended users.

Anne M. Boyd, Associate Professor of Library Science, University of Illinois, in "Personnel and Training for Reference Work," examines the contents and methods in reference training, pointing out its weakness in failing to build on the reader as a center, and a like failure to train the future reference assistant in research methods involving other materials than formal reference books. Miss Boyd suggests a more rigid selection of students and a broader concept of reference teaching.

A careful reading of all the papers in this volume leads the reviewer to conclude that once again the Graduate Library School of the University of Chicago has produced a valuable addition to the literature of librarianship above the level of necessary routines.

FLORENCE M. GIFFORD
Cleveland Public Library

COLE, WARREN H., PUESTRO, CHARLES B., and others. *First Aid, Surgical and Medical.* 2nd Ed., 425 pp. Illustrated by Tom Jones and Carl Linden. New York, D. Appleton-Century Company, 1943. $3.00.

All of the usual and many of the unusual physical conditions requiring first aid are covered in considerable detail by the authors in this new second edition.

In fact, the etiology, symptomatology and treatment, in all conditions, including those caused by war, is enough in detail to make the treatise a book of ready reference for any busy Medical or Surgical practitioner in handling the unexpected cases, which he may be called upon to diagnose and treat.

To Medical students completing their fourth year, a simple course in first aid based on this book would tend to crystallize their ideas and simplify the type of professional work that will make up much of their practice for several years.

The hospital interne will find the careful indexing and up-to-date diagnosis and treatment outlined in this work on first aid a great help in the emergency care of patients admitted to his wards.

As a textbook to be used in the instruction of nurses in first aid, this work will prove especially valuable.

FREDERICK STARR WRIGHT
Colonel, Medical Corps, U. S. Army

HUME, EDGAR ERSKINE. *Victories of Army Medicine, Scientific Accomplishments of the Medical Department of the United States Army.* 250 pp., illustrated. Philadelphia, J. B. Lippincott Company, 1943. $3.00.

Victories of Army Medicine is a history of the scientific accomplishments of the Medical Corps of the United States Army. Colonel Hume dedicates this volume to six physicians of his name and line. The book is largely based on lectures delivered in 1942 before the College of Physicians of Philadelphia and the Johns Hopkins University and on the 1943 Annual Beaumont Lecture before the Wayne County Medical Society of Detroit.

The author has had a distinguished career in the Army Medical Corps during World War I and since that time has written important medical and historical books. In *Victories of Army Medicine* he has confined his study to the work supervised or individually done by career medical officers. To include the individual achievements of medical officers who are serving for the emergency only would be to consider the advance of American medicine as a whole.

Colonel Hume begins his book with a sketch of the United States Army Medical Department (1775-1943) giving an accurate account of the development of the medical work in the Army up to the present time. He then points with pardonable soldierly pride to the Army's contribution of three great American medical institutions, viz.,

1. The Army Medical Library and its Index Catalogue, which is termed "America's Greatest Gift to Medicine."
2. The Army Medical Museum, the world's largest.
3. The Army Medical School, America's oldest school of preventive medicine.

Several chapters are devoted to the part played by the Army Medical Department in founding American meteorology and in its contributions to anthropology, ethnology and ornithology. The first American textbook on surgery was written by an American military surgeon, John Jones (1729-1791), and the first Professor of Surgery in America was William Shippen (1731-1808) who was appointed at the College of Philadelphia in 1766. The achievement of the Medical Department of the U. S. Army that is best known to the general public is unquestionably the proof by Walter Reed and his associates that the mosquito transmits yellow fever and the application of this knowledge in Panama, thereby making the construction of the Canal possible.

Colonel Hume relates the control of typhoid fever by vaccines, the Army's first fight against small-pox during the War of 1812, and the contributions made by William Beaumont at a frontier fort which gave the world more accurate information about digestion than had been learned in many previous

years. Modern purification of drinking water is derived from methods discovered and developed by the Army. Army doctors have done valuable work in the use of ultra-violet light, in control of tuberculosis, and in studies of ventilation, nutrition, and diet. The book contains excellent illustrations, including photographs, some of which are in color, of many Army officers, and a number of title pages of historical medical publications. The final chapter gives a list of the Chiefs of the Medical Department of the U. S. Army and a list of the U. S. Army General Hospitals. The appendix contains references for the various chapters and a list of the author's other publications.

It might be inferred from this review that the book is more like an encyclopedia than an interesting story, but such is not the case. Colonel Hume has written his story in a way which should fascinate and thrill every American making him proud of the accomplishments of the Medical Department of the United States Army.

A. I. LUDLOW, M.D.

MAISEL, ALBERT Q. *Miracles of Military Medicine.* 373 pp. New York, Duell, Sloan and Pearce, 1943. $2.75.

Mr. Maisel has achieved the task of translating recent medical progress into language easily understood by the layman. His information comes from various medical men whose help and advice is acknowledged to be of the greatest importance. And so we have the story of new weapons—the weapons that save lives. To enumerate briefly a few of the miracles: there is blood plasma now serving to prevent shock, the closed cast treatment for fractures, the discovery of an apparatus called a "locator" to eliminate blind probing into wounds for bullets and bomb scraps, the treatment of burns, new developments in plastic surgery, tetanus toxoid, substitutes for quinine, the use of the sulfa drugs, local anaesthesia, and aviation medicine.

One of the most significant chapters, "Blitz medicine for blitz warfare," describes the organization of the Medical Corps in modern warfare. The Spanish Civil War did much to modernize field surgery, so necessary in total war, and the United Nations now have the best equipment available for quick treatment of the wounded, including their evacuation under extremely adverse conditions.

Advances in Military Medicine are proceeding so rapidly that Mr. Maisel admits some of his facts and figures may be out of date, even before the book leaves the press, but he is one author who is glad to applaud this rapid change.

One of the most challenging statements in the book concerns the lessons taught our doctors in the organized and co-operative work they are now doing, both on the war front and at home. War Medicine in the Army is completely socialized. Perhaps, the author suggests, medicine after the war will be organized in such a way that there will be new ways of bringing medicine to more people than have ever been reached before.

ELIZABETH KEYS

MIZWA, STEPHEN P. *Nicolas Copernicus.* 88 pp. New York, The Kosciuszko Foundation, 1943. $0.75.

This attractive brochure, prepared for the four hundredth anniversary of the death of Copernicus and of the publication of his *De revolutionibus orbium coelestium,* contains four sections, on the life and work of Copernicus, on his Polish nationality and affiliations, on program material for quadricentennial exercises, and on Polish-American cultural relations. After serving its immediate purpose, it will be valued chiefly for its twenty-odd illustrations and above all for the cover design by Arthur Szyk, portraying Copernicus in the style of medieval manuscript illumination.

MAX H. FISCH

SMITH, ERNEST V. *The Making of a Surgeon.* [17] 18-344 pp., table, 23½ cm. Fond du Lac, Wisconsin, The Berndt Printing Company, 1942. $3.00.

This volume relates Dr. Smith's experiences and conclusions based on more than thirty-five years devoted to medicine and surgery, first as a country doctor, then as an assistant to Dr. W. J. Mayo, and finally as a co-partner in a medical group at Fond du Lac. Considerable space is given to a description of the Mayo Clinic. His appreciation of Dr. W. J. Mayo is indicated in the sentence: "I believe that his name will be recognized as the greatest in the history of surgery."

The later chapters of the book are devoted to a number of interesting surgical cases, humbugs in medicine and surgery, cancer, fee splitting, and his conception of the best method of becoming a surgeon. An acquaintance with the author and several of the persons mentioned in this book has no doubt been a factor in the interest it holds for the reviewer. It is commended as a well-written story of a typical American surgeon.

A. I. LUDLOW, M.D.

Medical librarians will welcome the news which has reached us through Dr. John Fulton that William Heinemann Ltd., 99 Great Russell Street, W.C.1, London has recently published a new book by MAX NEUBURGER entitled *British Medicine and the Vienna School.*

Dr. Neuburger, an honorary member of our association, now in his seventy-sixth year, has many friends and admirers in this country. His most important work in medical history is his *Geschichte der Medizin.* This was originally published between 1906 and 1911 by Enke in Stuttgart in two volumes in three parts. At the urging of Sir William Osler, Ernest Playfair translated most of this work (London, Oxford University Press, 1910-1925, v. 1, v. 2, pt. 1).

In 1904, Professor Neuburger succeeded to Theodor Puschmann's chair as Professor of the History of Medicine in the University of Vienna. Shortly after the Anschluss, Dr. Neuburger escaped to London. He is now Chief of the Catalog Department at the Wellcome Historical Medical Museum, 183, Euston Road, London, N.W.1.

The attention of medical librarians is directed to the following important publication: War Department. Office of the Surgeon General. Circular Letter No. 33. Subject: *Treatment and Control of Certain Tropical Diseases* (Feb. 2, 1943). This pamphlet is based on recommendations of the Subcommittee on Tropical Diseases and the Committee on Medicine of the Division of Medical Sciences, National Research Council.

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In this year of Vesalius's quatercentenary, HENRY SCHUMAN, 20 East 70th Street, New York, has issued *Catalogue Eight—Spring 1943.* This handsome 112 page catalog of Rare Medical Books contains the following sections: (1) Books by Vesalius; (2) Works Incorporating in part Vesalius's Illustrations or Writings; (3) Medicine of the Renaissance; and (4) Miscellany.

It is remarkable that Mr. Schuman has been able to gather together, under war-time conditions, so large a number of books indispensable for the study of Vesalius and his contemporaries.

Mr. Schuman also promises early publication of the long-awaited *Bio-Bibliography of Andreas Vesalius,* begun by Dr. Harvey Cushing and being completed by Dr. John F. Fulton.

* * *

The attention of Physicians and Medical Librarians is directed to the publication of the following new journal, QUARTERLY REVIEW OF OBSTETRICS and GYNECOLOGY. The objective of this Review is to bring together in one publication abstracts of the World literature on obstetrical and gynecologic literature. Those interested in subscribing to this new journal should communicate with:

Mr. Henry Klannberg, Business Manager
Quarterly Review of Obstetrics and Gynecology
314 Randolph Place, N.E.
Washington, D.C.

* * *

MISS E. LOUISE WILLIAMS, Librarian of the Mississippi State Board of Health, Jackson, Mississippi has published the following brochure: *A Selected List of Late Books in the Medical Library, Mississippi State Board of Health, 1942.* More librarians should follow Miss Williams' lead and publish lists of their important books.

* * *

MISS LOUISE HEINZE, Librarian of the NEW YORK PSYCHOANALYTIC INSTITUTE, 324 West 86th Street, NEW YORK CITY, has prepared a ten page mimeographed bibliography entitled *Freudiana in the Library of the New York Psychoanalytic Institute.* Copies are available from Miss Heinze.

Our Contributors

DR. ARTURO CASTIGLIONI is Research Associate in the Historical Library of the Yale University School of Medicine. Dr. Castiglioni was formerly Professor of the History of Medicine at the University of Padua, and Head of the Medical Staff of the Lloyd Triestino Lines. He is best known for his splendid *Storia della Medicina* (Milano, A. Monadori, 1927). An English translation from the second Italian edition was made by Dr. E. B. Krumbaar and published by Alfred A. Knopf in 1941. There are also translations into French, Spanish, and German. Dr. Castiglioni has written many other books on medical history.

TOM JONES is Professor of Medical and Dental Illustration and Head of the Department of Illustration of the Colleges of Medicine, Dentistry, and Pharmacy of the University of Illinois, at Chicago. He has illustrated several medical books, and the excellence of his anatomic illustrations is well-known. Mr. Jones studied art at the Corcoran School of Art, Washington, D.C.; the St. Louis School of Fine Arts; and Academie Colrossi, Paris.

HENRY SAYLES FRANCIS is Curator of Painting and Graphic Arts at the Cleveland Museum of Art. He graduated from Harvard College in 1929. From 1924 to 1927 he was Assistant to the Curator of Prints at the Museum of Fine Arts, Boston. He came to Cleveland in 1927 as Curator of Prints. Mr. Francis returned to Harvard in 1929 as Assistant to the Director of the Fogg Museum. In 1931 he left Boston for his present position.

DR. MAX HAROLD FISCH is Curator of Rare Books of the Cleveland Branch of the Army Medical Library. He was formerly Assistant Professor of Philosophy in Western Reserve University, Cleveland. Dr. Fisch received his Doctorate in Philosophy from Cornell University in 1930. He is the author of *Philosophy in America from the Puritans to James,* in collaboration with P. R. Anderson, (New York, Appleton-Century, 1939) and of several articles in the field of philosophy. Cornell University Press has scheduled his translation of the *Autobiography of Giambattista Vico* for early publication.

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